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UNIVERSITY COLLEGE, BRISTOL.

CALENDAR FOR THE SESSION 1886-87.

BRISTOL:
ARROWSMITH, PRINTER; QUAY STREET.

1886.

UNIVERSITY COLLEGE, BRISTOL.

THE College supplies for persons of either sex above the ordinary school age the means of continuing their studies in Science, Languages, History, and Literature; and particularly affords appropriate instruction in those branches of Applied Science which are more nearly connected with the arts and manufactures. A course of instruction has been arranged for students intending to become Engineers, Surveyors, or Architects. Special attention is given to class teaching and laboratory work.

The wants of teachers, clerks, artisans and others, who are employed during the day, are supplied by evening classes and courses of lectures, to which admission may be obtained at low fees.

Medical education is provided by the Bristol Medical School, which is affiliated to the College.

Arrangements for students who may desire to live with a family have been made with residents near the College. For a list of Professors and others who are thus willing to receive students into their houses during the College Session, and for information with regard to terms, etc., application should be made to the Principal, from whom information respecting lodgings for students may also be obtained.

Mrs. RAMSAY will attend at the College at the beginning of each Term for the purpose of admitting women students, and of giving information with regard to homes where women students can be received, and of affording such advice as may be required.

The Calendar is published at the end of the third Term in each year. When necessary, a Supplement is published in October, containing the results of the examinations held at the end of the third Term, and an account of such changes as take place during the vacation. This is to be had gratis, on application to the Registrar and Secretary.

All inquiries and applications for admission to any of the classes must be made at the College in Tyndall's Park.

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BRISTOL MEDICAL SCHOOL.

University College, Bristol.—Calendar.

1886-87.

	SEPTEMBER—1886.	
13	Meeting of Local Executive Committee, 4.15 p.m.	M
23	Candidates for College, Catherine Winkworth, John Stewart, and Evening Class Scholarships to send in their names to the Registrar.	Th
27	Scholarship Examinations begin.	M
	Foundation of Bristol Medical School, 1828.	
	OCTOBER.	
1	Winter Session of Medical School begins.	F
1	Admission of Medical Students.	F
1	Admission of Day Students begins, and continues daily, 10 to 1 o'clock.	F
2	Meeting of Educational Board, 3.30 p.m.	S
4	Meeting of Local Executive Committee, 4.15 p.m.	M
4	Election of College, John Stewart, Catherine Winkworth, and Evening Class Scholars.	M
4	Opening Address, by Professor Leipner, at 8 p.m., in the Lecture Room of the Bristol Museum and Library.	M
5	First (or Winter) Term begins.	Tu
5	Admission of Evening Students begins, 6.30 to 8.30 p.m.	Tu
7	First Section of Permanent Buildings in Tyndall's Park opened in 1880.	
10	First Session of the College opened, 1876, in temporary premises.	
18	B.Sc. Examination of the University of London begins.	M
25	B.A. Examination of the University of London begins.	M
25	M.B. Examination of the University of London begins.	M
27	Address to Students by the Very Rev. Dr. Stanley, Dean of Westminster, 1877.	
	NOVEMBER.	
5	Address to Members of Bristol University College Club by Sir John Lubbock, Bart., M.P., 1883.	
8	Meeting of Educational Board, 5 p.m.	M
10	Meeting of Local Executive Committee, 4.15 p.m.	W
17	Meeting of Council, 2.30 p.m.	W
17	Annual Ordinary General Meeting of Governors, 4.30 p.m.	W
	DECEMBER.	
8	Meeting of Local Executive Committee, 4.15 p.m.	M
9	First Term Examinations begin.	W
13	Meeting of Educational Board, 5 p.m.	Th
15	First Term ends.	W

Calendar, 1887.

	JANUARY—1887.	
10	Matriculation Examination of the University of London begins	M
14	Second (or Spring) Term begins.	F
15	Address to Students by the Right Hon. G. J. Goschen, M.P., 1879.	
15	Second Section of Permanent Buildings opened in 1883.	
16	Address to Students by Dr. William B. Carpenter, C.B., 1880.	
17	Preliminary Scientific (M.B.) Examination of the University of London begins. (Pass.)	M
	FEBRUARY.	
9	Meeting of Local Executive Committee, 4.15 p.m.	W
14	Meeting of Educational Board, 5 p.m.	M
16	Meeting of Council, 2.30 p.m.	W
26	Candidates for Honour Certificates in Inorganic Chemistry and Engineering to send in their names to the Registrar.	S
	MARCH.	
9	Meeting of Local Executive Committee, 4.15 p.m.	W
14	Meeting of Educational Board, 5 p.m.	M
19	Candidates for Examinations of Science and Art Department to send in their names to the Registrar.	S
25	Address to Members of Bristol University College Club by the Right Hon. Sir Lyon Playfair, K.C.B., M.P., 1885.	
28	Second Term Examinations begin.	M
31	Winter Session of the Medical School ends.	Th
	APRIL.	
1	Second Term ends.	F
9	Candidates for Whitworth Scholarships to send in their names to the Registrar.	S
26	Third (or Summer) Term begins.	Tu
	MAY.	
2	Summer Session of Medical School begins.	M
2	Admission of Medical Students.	M
9	Meeting of Educational Board, 5 p.m.	M
11	Meeting of Local Executive Committee, 4.15 p.m.	W
24	Candidates for Honour Certificates (except in the subjects of Inorganic Chemistry and Engineering) to send in their names to the Registrar.	Tu
25	Meeting of Council, 2.30 p.m.	W
26	Address to Members of Bristol University College Club by the Right Hon. Lord George Hamilton, M.P., 1886.	
30	Monday in Whitsun Week — College closed	M
31	Tuesday in Whitsun Week — College closed	Tu

Calendar, 1887.

	JUNE.	
6	M.A. Examination (Branch I.) of the University of London begins.	M
6	Oxford University Examination for Women (held in Bristol) begins.	M
8	Meeting of the Local Executive Committee, 4.15 p.m.	W
11	Public Meeting held to promote the establishment of the College, 1874.	
11	Candidates for Gilchrist Scholarships to send in their names to the Principal.	S
13	M.A. Examination (Branch II.) of the University of London begins.	M
13	Meeting of Educational Board, 5 p.m.	S
20	Matriculation Examination of the University of London, held in the College, begins.	M
20	M.A. Examination (Branch III.) of the University of London begins.	M
20	Cambridge University Higher Local Examination, held in the College, begins.	M
27	Third Term Examinations begin.	M
27	M.A. Examination (Branch IV.) of the University of London begins	M
	JULY.	
1	Third Term ends.	F
18	Intermediate Examination in Arts of the University of London begins.	M
18	Intermediate Examination in Science of the University of London begins.	M
18	Preliminary Scientific (M.B.) Examination of the University of London begins. (Pass and Honours.)	M
25	Intermediate Examination in Medicine of the University of London begins.	M
30	Summer Session of Medical School ends.	S
	AUGUST.	
9	College Incorporated, 1876.	

UNIVERSITY COLLEGE, BRISTOL.

ESTABLISHED 1876.

Calendar for the Session 1886-87.

GOVERNORS OF THE COLLEGE.

(1) All Donors of £50 and upwards, *for life;* and all Annual Subscribers of £5 and upwards, *during subscription.*

(2) Nominees of Corporate Bodies or Associations, who are Donors of £250 or upwards, *in perpetuity;* or Annual Subscribers of £10 or upwards, *during subscription.*

(3) Certain Official and Representative Persons.

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3000	150	750	75	 5
4000	200	1000	100	 6

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(1) Elected by the Governors of the College. (2) Nominated by the Vice-Chancellor of the University of Oxford. (3) Nominated by the Vice-Chancellor of the University of Cambridge. (4) Nominated by the Vice-Chancellor of the University of London. (5) Nominated by the Lord President of the Privy Council. (6) Nominated by Balliol College, Oxford. (7) Nominated by New College, Oxford. (8) Nominated by the Principal and Professors of the College. (9) Nominated by the Bristol Medical School. (10) Nominated by the Worshipful the Clothworkers' Company. (11) *Ex-officio* a Member of the Council.

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Mathematics	Lecturer, D. CODRINGTON SELMAN.
Experimental Physics	Professor, J. RYAN, M.A. Cambridge, D.Sc. London. Demonstrator, A. P. CHATTOCK.
Engineering	Professor, J. RYAN, M.A., D.Sc. Lecturer, D. CODRINGTON SELMAN. Workshop Demonstrator,
Geology, Biology, and Zoology	Professor, C. LLOYD MORGAN.
Botany	Professor, A. LEIPNER.
Political Economy	Lecturer, E. C. K. GONNER, B.A., Oxford.
Modern History and English Literature	Professor, JAMES ROWLEY, M.A, Trinity College, Dublin.
Greek and Latin	Professor, R. FANSHAWE, M.A., late Fellow of New College, Oxford.
Hebrew	Lecturer, BERNHARD HEYMANN.
French	Lecturers, EUGÈNE PELLISSIER, M.A., LL.B., B.Sc. A. D'OURSY, B.A.
German	Lecturer, A. LEIPNER.

SCHOLARSHIPS TENABLE AT THE COLLEGE.

GILCHRIST SCHOLARSHIPS.

Secretary to the Gilchrist Educational Trust:

HENRY R. PAPPS, Esq.,
4 The Sanctuary, Westminster, S.W.

Conditions for Scholarships instituted by the Gilchrist Educational Trust in connection with University College, Bristol:

A Scholarship of the value of £50 per annum, tenable for Three Years, will be annually awarded, by competitive Examination, under the following conditions:

1.—Every candidate must apply to the Principal of University College, Bristol, before June 11th, and submit to him a certificate of age and satisfactory testimonials to character.

2.—Every candidate must have completed his *sixteenth* year, and his age on the day of election must not exceed *eighteen* years.

3.—Candidates approved by the Principal shall present themselves at the Midsummer Matriculation Examination of the University of London; and the Scholarship of £50 shall be awarded to the candidate who shall stand highest at that Examination, provided that he pass in the *Honours* Division.

4.—Every Scholar shall attend in each year at least three Courses of Lectures, to be selected by himself, in University College, Bristol, provided that the total number of lectures in such courses averages twelve lectures per week throughout the Session. But if permitted by the authorities of the College, he may spend his third year at some other College.

5.—Every Scholar shall present, on his applying for each half-yearly instalment of his Scholarship (which will be payable on the 1st of January and the 1st of July), a certificate from the Principal of University College, Bristol, that his conduct has been good, and that he is pursuing his studies with a view to graduation in the University of London in one of the following Faculties: Arts, Laws, Science, or Medicine.

6.—Every Scholar shall be required to present himself at the Intermediate Examination in one of the above-named Faculties of the University of London, at an interval of not more than two academical years from his election, unless excused from doing so by the Gilchrist Trustees; and if he do not so present himself (unless by permission of the Trustees), or if he fail to pass the Examination, he shall be considered as having forfeited his claim to the remaining instalments of his Scholarship.

NOTE. (1) These Scholarships are open to women.

(2) Half a day of Laboratory Work will be taken as equivalent to a Lecture.

(3) Gilchrist Scholars are not permitted to hold any other Scholarship tenable at the College.

COLLEGE SCHOLARSHIPS.

The following College Scholarships will be competed for in September, 1886:

One Chemical Scholarship of the value of £25, tenable for one year; open to men and women.

One Engineering Scholarship of the value of £25, tenable for one year; open to men.

The subjects of Examination will be:

CHEMISTRY (including Laboratory Work).
ARITHMETIC.
EUCLID.
ALGEBRA.
TRIGONOMETRY.
CONICS (Geometrical and Analytical).
DIFFERENTIAL AND INTEGRAL CALCULUS.
MECHANICS AND ENGINEERING.
GEOMETRICAL DRAWING (Plane and Solid).

Machine Construction and Drawing.
Heat, Sound, and Light.
Electricity and Magnetism.
Physical Geology and Geography.
Stratigraphical Geology and Palæontology.
Zoology and Animal Biology.
Botany (Structural and Physiological).
Political Economy.
Logic.
Moral Philosophy.
English History, from the Norman Conquest till the Treaty of Lambeth (1066–1217).
English Literature, from the birth of Chaucer till the birth of Shakespeare.
Greek Language, Literature, and History.
Latin Language, Literature, and History.
French Language and Literature.
German Language and Literature.

Candidates will be allowed to enter in as many of the above subjects as they choose. Twenty per cent. of the maximum mark in each subject will be deducted from the marks obtained by each candidate before adding them up to form the total of the candidate's marks. Information as to the full marks for each subject can be obtained on application to the Principal.

Candidates must send in their names and lists of subjects not later than Thursday, the 23rd September, to the Registrar and Secretary.

The minimum age is fixed at sixteen. The successful candidates must be prepared to show certificates of birth, and give references if required.

The Chemical Scholarship will be awarded principally by the marks obtained in Chemistry; but in case the marks obtained in this subject by the best candidates are nearly equal, account will be taken of their marks in other subjects. The Chemical Scholar will in general be required to work in the Laboratory for six days a week during the Session.

The Engineering Scholarship will be awarded principally by the marks obtained in Arithmetic, Euclid, Algebra, Trigonometry, Conics, Calculus, Mechanics and Engineering, and Geometrical and Machine Drawing. The Engineering

Scholar will in general be required to attend one of the complete courses arranged for students in the Department of Engineering.

CATHERINE WINKWORTH SCHOLARSHIPS.

The Catherine Winkworth Scholarships were founded by subscriptions in memory of the late Catherine Winkworth, of Clifton. These Scholarships, which are tenable at the College, are awarded annually, and are competed for at the same time and under the same regulations as the College Scholarships (see above).

Two Scholarships, each of the value of £15, will be awarded in September, 1886. They are open only to women who have not held a Scholarship at the College for more than one year. Candidates must send in their names and lists of subjects not later than Thursday, the 23rd September, to the Registrar and Secretary.

The Scholars will be required to attend at least two Courses of Lectures, in the day time, in each of the three Terms of the Session.

JOHN STEWART SCHOLARSHIPS.

These Scholarships are awarded from the interest on the sum of £1000, bequeathed to the College by the late John Stewart, of Montpelier, Bristol. They are competed for at the same time and under the same regulations as the College Scholarships (see above).

Two Scholarships, each of the value of £20, tenable for one year, open to men and women, will be awarded in September, 1886. Candidates must send in their names and lists of subjects not later than Thursday, the 23rd September, to the Registrar and Secretary.

The Scholars will be required to attend at least two Courses of Lectures in the daytime, in each of the three Terms of the Session.

The Examination for College, Catherine Winkworth, and John Stewart Scholarships will begin at ten o'clock on Monday, 27th September, 1886.

"HUGH CONWAY" SCHOLARSHIP.

This Scholarship, founded to the memory of the late Frederick John Fargus (Hugh Conway), is intended to encourage the study of Literature, and especially of English Literature, in the city of Bristol and its immediate neighbourhood.

It will be awarded on the results of an Examination to be held at University College, Bristol, every fourth year, will be tenable for two years, and be of the annual value of about £40.

It will be open to such students of University College, Bristol, as may have lived in Bristol or its immediate neighbourhood for the three years, and attended the Day or Evening Classes and Lectures in English Literature, and the Day or Evening Classes and Lectures in Greek, Latin, French, German, or any one of them, during the entire Session immediately preceding the Examination.

Candidates will be examined in the period or periods of English literary history lectured upon, and the books or portions of books read at class in the day during the immediately preceding Session, supplemented by such additional material of study in the same subject as the Professor of English Literature may recommend and the Council of the College approve, together with one at least (but not more than two) of the following subjects: The Language and Literature of Greece, those of Rome, those of France, and those of Germany. To no one of these secondary subjects, however, shall a greater value be allowed at the Examination than one-half that assigned to the parts that are taken from the Literature of England.

The successful candidate will be required to attend the Day Lectures and Classes in English Literature, and in one at least of the secondary subjects specified above, and to pass with credit the Term Examinations in his principal and his secondary subject, in each of which he will have, as an essential condition of his keeping the Scholarship after the first year, to be placed at least once during that year in the First Class. And to entitle him to

receive payment of the Scholarship for the last half-year, and to describe himself afterwards as a "Hugh Conway Scholar," it will be necessary that he should obtain an Honours Certificate in English Literature at the end of the second year.

It will, however, be in the power of the Council of the College, on the recommendation of the Educational Board, to relax these conditions in the case of any Scholar who has been unable to observe them through sickness or other urgent cause.

Should the Scholarship on any one occasion fail to be taken, the Examination will be again held in the following year.

The Trustees of the Fund reserve the right to amend this scheme, or to substitute a fresh one, if they think fit.

The Examination for the first Scholarship will take place in September, 1888.

EVENING CLASS SCHOLARSHIPS.

Two Scholarships, each of the value of £2 10s., will be awarded in September, 1886.

The Subjects of Examination will be:

CHEMISTRY (Non-metals).
ARITHMETIC.
EUCLID (first three books).
ALGEBRA (to quadratic equations).
TRIGONOMETRY (solution of Triangles).
APPLIED MECHANICS.
GEOMETRICAL DRAWING (Plane and Solid).
MACHINE CONSTRUCTION AND DRAWING.
HEAT, SOUND AND LIGHT.
ELECTRICITY AND MAGNETISM.
PHYSICAL GEOLOGY AND GEOGRAPHY, with Stratigraphical Geology.
ENGLISH HISTORY: from the death of William III. till the peace of Aix-la-Chapelle (1702-1748).
ENGLISH LITERATURE: *As You Like it*, *Il Penseroso*, and Southey's *Life of Nelson*.
GREEK LANGUAGE, LITERATURE, AND HISTORY.
LATIN LANGUAGE, LITERATURE, AND HISTORY.
FRENCH LANGUAGE, LITERATURE, AND HISTORY.
GERMAN LANGUAGE, LITERATURE, AND HISTORY.

Candidates will be allowed to enter in as many of the above subjects as they choose. Twenty per cent. of the maximum mark in each subject will be deducted from the marks obtained by each candidate, before adding them up to form the total of the candidate's marks

Candidates must send in their names and lists of subjects not later than Thursday, the 23rd September, to the Registrar and Secretary.

The successful candidates must be prepared to give references if required.

The Examination will begin at Seven o'clock on Monday, the 27th September, 1886.

ORDINARY CERTIFICATES.

Any student who diligently attends a course of instruction in any subject during a Session, and obtains a place in the first or second class in the Examination at the end of the course, shall be entitled to receive a certificate from the College. Ordinary certificates are not, however, granted for Elementary Classes in Languages.

HONOUR CERTIFICATES.

1. An *Honour Certificate* shall be granted, after examination by an External Examiner, in conjunction with the Professor or Lecturer of the subject, to any student of the College who has diligently attended a course of instruction in any one of the subjects specified below, for three hours a week during three Terms, or two hours a week during four Terms:—

GROUP I.

INORGANIC CHEMISTRY.
ORGANIC CHEMISTRY.
PURE MATHEMATICS.
APPLIED MATHEMATICS.
ENGINEERING, PART I. (viz., the Theory of Structures, Geometrical Drawing, Surveying, and Levelling).
ENGINEERING, PART II. (viz., the Theory of Mechanism, Prime Movers, Machine Design and Drawing).
PHYSICS.
GEOLOGY.
ZOOLOGY.
BOTANY.

GROUP II.

Political Economy.
Logic.
Moral Philosophy.

GROUP III.

Modern History.
English Language and Literature.
Greek Language and Literature.
Latin Language and Literatrre.
Greek and Roman History.
French Language and Literature.
German Language and Literature.

2. Candidates for Honour Certificates, before proceeding to examination, must obtain the consent of the Principal, who will provide them with a form of admission to the examination. These forms must be sent to the Registrar, with the fee for examination, on or before the 24th May, except in the case of candidates for certificates in Inorganic Chemistry and Engineering, whose forms must be sent in not later than the 26th February.

3. *Times of Examination.* The Examination for Certificates will in general be held at the end of June, except in Inorganic Chemistry and Engineering, in which subjects the Examination will be held at the end of March.

4. *Fees for Examination.* Each candidate shall pay 10/- for examination in each subject.

ASSOCIATESHIPS.

1. The title of Associate of University College, Bristol, will be conferred on all candidates who—

A.—Shall have diligently attended an amount of instruction in the College equivalent to three courses of three hours a week each in each of three Terms during two Sessions; and shall have obtained a certificate of satisfactory conduct; and

B.—Shall have obtained some one of the four following distinctions, namely—

(i) College Honour Certificates in four subjects, not more than three of which are in any one Group, provided that if three of them are in Group III. one of them be Latin;

(ii) A certificate, granted by the Examiners and approved by the Council, of having produced an essay or original investigation of exceptional merit, together with Honour Certificates in three subjects.

(iii) A degree in any University in the United Kingdom; or

(iv) Such distinction in the Oxford University Examination for Women, or the Cambridge University Higher Local Examination, as from time to time shall be considered sufficient.

NOTE.—For the present a class in Honours in each of two sections of the second part of the Oxford Examination will be considered sufficient; or a first class in each of two of the four Groups B, C, D, E of the Cambridge Examination, and a second class in a third Group.

2. The title of Associate in Engineering shall be granted, on application, to all candidates who have complied with condition A, and who obtain an Honour Certificate in Engineering, Part I., and in Engineering, Part II., and in three of the subjects, Pure Mathematics, Applied Mathematics, Physics, Geology, and Chemistry; provided that one at least of his certificates be in Pure or Applied Mathematics.

3. The title of Associate in Chemistry shall be granted, on application, to all candidates who have complied with condition A, and who obtain Honour Certificates in Inorganic and in Organic Chemistry, and in either Pure Mathematics or Physics; and who pass satisfactory examinations in Qualitative and Quantitative Analysis.

4. Associates shall be entitled to admission to such lectures and on such terms as the Council shall from time to time direct.

NOTE.—For the present they shall be admitted free to all day lectures.

5. The Council may elect, on the recommendation of the Educational Board, former students of the College who, though not possessed of the foregoing qualifications, shall have distinguished themselves in Literature, Science, or Art, or in some career of public usefulness; provided that no person shall be so recommended within seven years after he has first entered as a student.

6. Every Associate shall hold his Associateship and enjoy its privileges subject to the rules and regulations for the time being in force in the College, and may be deprived of it by the Council on the recommendation of the Educational Board.

ASSOCIATES.

R. Mary Abbot,
Franklen P. Evans,
H. S. Hele Shaw,
David M. Davies, B.A.,
Joseph A. Leon, B.A.,
W. Barrett Roué, M.D.,
P. Watson Williams, M.B.

LIBRARY.

A Library is open for the use of past and present students.

REGULATIONS.

1. The Library is open for the use of past and present students of the College. Application for the loan of, or for reference to, books should be made either at the Registrar's Office, or at the Porter's room, where catalogues of the books contained in the Library may be consulted.

2. The books which are kept for loan must not be kept out beyond the specified number of days; but if no application has been made for the book, the student, by re-entering it, may retain the book for a further period.

3. The books which are kept for reference are on no account to be removed from the College premises, and

must be returned immediately after the student has consulted it.

4. A receipt must in every case be signed by the student on receiving a book either for reference or loan.

5. In the case of an injury being done to any book, the student injuring it will be required to substitute another copy in its place.

6. All books must be returned to the Library on or before the last day of the Session.

COLLEGE SOCIETIES.

LITERARY, SCIENTIFIC, AND DEBATING SOCIETY.

The object of this Society is to afford opportunities of social and intellectual intercourse amongst former and present day and evening students of the College. Meetings are held during the first and second Terms of the Session. Any student wishing to join the Society may do so on being proposed and seconded by members. The members of the Council and Staff of the College are honorary members of the Society. A small annual subscription is payable by members.

WOMEN'S DEBATING SOCIETY.

The purpose and rules of this Society are similar to those of the above. Its meetings are held on every third Friday during Term time at three p.m.

OFFICERS, 1884-85.

President: MRS. RAMSAY.
Vice-President: MRS. LLOYD MORGAN.
Treasurer: HELEN M. STURGE.
Secretaries: M. J. OGILVIE and F. C. PRIDEAUX.
Committee: MRS. SPENCER, J. RAWSON, M. PEASE, E. W. FRY, A. K. COOPER, C. BUDGETT.

ENGINEERING SOCIETY.

The objects of this Society are for the reading and discussion of papers contributed by its members, and for promoting intercourse among them, on subjects connected

with the Department of Engineering and the Constructive Professions; to organize excursions to various works in course of construction and visits to engineering establishments; to obtain from past students or others such information with regard to professional occupation which may be of assistance to members of this Society, either upon leaving the College or at any future time. All students who are attending, or who have at any time attended Engineering courses, are eligible as members; all other past and present students of the College are eligible as associates. A small annual subscription is payable by members and associates during their attendance at the College. Meetings, under the Presidency of the Professor of Engineering, are held during Term time.

LOCKERS.

Lockers are provided in the cloak-rooms, for the use of students, at a charge of 1/- for one Term, or 2/6 for a Session. Each student will be required to deposit 1/- with the Registrar, to whom the key of the Locker must be returned on or before the last day of the Session. The deposit will be returned to the student when the key is given up, provided the locker is uninjured.

SESSION 1886-87.

The Session will be opened with an Introductory Address by Professor Leipner, on Monday, the 4th of October, 1886, and will end on 1st July, 1887. The Session is divided into the following Terms:

First (or Winter) Term—

Commencement - Tuesday, 5th October, 1886.
Termination - Wednesday, 15th December, 1886.

Second (or Spring) Term—

Commencement - Friday, 14th January, 1887.
Termination - Friday, 1st April, 1887.

Third (or Summer) Term—

Commencement - Tuesday, 26th April, 1887.
Termination - Friday, 1st July, 1887.

The College is closed on Whit-Monday and Whit-Tuesday, the 30th and 31st May.

Examinations will be held at the following dates:

First Term - - 9th to 15th December.
Second Term - 28th March to 1st April.
Third Term - 27th June to 1st July.

SESSION 1886-87.

DAY LECTURES.

GENERAL REGULATIONS.

(1.) Persons under the age of 16 years seeking admission as day students will be required to pass an entrance examination in English Grammar and Composition, and in Elementary Mathematics. This examination will in general be held on the first day of Term, but any candidate who desires to be admitted to it must give two days' notice.

(2.) The Principal will attend at the College for the purpose of admitting students at the beginning of each Term.

(3.) Every candidate for admission may be required to produce such testimonial of good character as shall be satisfactory to the Principal.

(4.) Every student, on admission, must sign an undertaking to observe all the regulations affecting students made by the Council of the College for the time being.

(5.) Every student must obtain a card of admission to the class which he enters. This is issued by the Registrar and Secretary, on the presentation of a certificate signed by the Principal, and on payment of the fees. No student is entitled to attend the classes until he has complied with this regulation. The first lecture of every course will, however, be free.

(6.) A record will be kept of the attendance of students. A report of the attendance of any student will be periodically sent to his parents or guardians if they require it.

(7.) Disorderly conduct on the part of any student will be reported to the Principal, who will adopt such action thereon as he may deem necessary.

(8.) Every student is required to provide himself with a College Calendar.

The Council reserve to themselves the power of suspending any class, if there is not a sufficient number of entries.

FEES.

The fees are, as a rule:—For a course of instruction of three or more hours a week, £5 5s. for three Terms, £4 4s. for two consecutive Terms, £3 3s. for the first or second Term singly, £2 2s. for the third Term. Some exceptions to this rule will be found in the statements of fees which are appended to the accounts given further on of the subjects of the several courses.

An entrance fee of 7s. is charged for each course; but all entrance fees for one Session may be compounded for by a single payment of a registration fee of £1 1s.

DEPARTMENT OF ENGINEERING AND THE CONSTRUCTIVE PROFESSIONS.

Particulars with regard to the courses arranged for students intending to become civil, mechanical, mining, or electrical engineers, surveyors or architects, are set forth in the prospectus of this department, page 80.

Day Lectures.

SUBJECTS OF INSTRUCTION.

CHEMISTRY.

Professor W. RAMSAY, Ph.D.

Lecturer and Demonstrator, SYDNEY YOUNG, D.Sc.

JUNIOR CLASS. (FIRST YEAR.)

Wednesday and Saturday, 10—11.

This course will be delivered during the first and second Terms.

INORGANIC CHEMISTRY.—NON-METALS.

Principles of Chemistry.

Nature of Matter—Elements—Compounds and Mixtures—Synthesis and Analysis—Laws of Chemical Combination—Atomic Weights—Nomenclature and Symbolic Notation—Principles of Classification.

Non-Metals.

The Non-Metals will be described in their order: their properties, and the properties of their compounds, and the relations subsisting between them, will be shown. The processes of manufacture of compounds of the Non-Metals used in the Arts will be described.

Text-books.—Roscoe's *Elementary Lessons on Chemistry;* Thorpe's *Chemical Problems.*

This course covers the subject prescribed for the Matriculation Examination of the University of London.

Fee for the course, £3 3s.

SENIOR CLASS. (SECOND YEAR.)

Monday, Tuesday, Thursday, and Friday, 9—10.

This course will be delivered during the first and second Terms.

CHEMISTRY.—NON-METALS AND METALS.

The principles of Chemistry will be reconsidered more fully, and the Chemistry of the Non-Metals will be treated of in greater detail. The Metals and their compounds will be described, special attention being devoted to those of commercial importance. The Chemistry of the Carbon Compounds will be treated of shortly. Some lectures will be devoted to Crystallography and Spectrum Analysis.

Text-books.—Fownes' *Inorganic Chemistry;* Thorpe's *Chemical Problems.* To be consulted for reference—Roscoe and Schorlemmer's *Treatise on Chemistry;* Remsen's *Inorganic Chemistry.*

This course covers the subject as prescribed for the Preliminary Scientific (M.B.) and Intermediate Examination in Science of the University of London.

Fee for the course, £4 4s.

ADVANCED CLASS.

Saturday, 9—10.

This course will be delivered during the second and third Terms.

The principles of Chemistry will be specially considered, comprising the Atomic Theory, Chemical Classification, the Periodic Law, Thermal Chemistry, Dissociation, the application of Physical methods to the solution of Chemical Problems, and the In-

fluence of Mass and Temperature on the progress of reactions.

Text-books.—Muir's *Principles of Chemistry;* Muir's *Thermal Chemistry;* Remsen's *Inorganic Chemistry.*

Those students who show intelligence in the work of the first Term of the senior class will be invited to attend these lectures. They will be found suitable to those about to proceed to graduation in Chemistry. To such, and to senior laboratory students, the fee for the two Terms will be £1 1s.; to others £2 2s.

ORGANIC CHEMISTRY.—(CHEMISTRY OF THE CARBON COMPOUNDS.)

Professor W. Ramsay, Ph.D.

This course will relate to the more important groups of the Compounds of Carbon.

Lectures will be given during the second Term on Tuesdays and Thursdays at ten o'clock; during the third Term on Tuesdays, Thursdays, and Saturdays at ten o'clock.

Students are recommended to take this course during the second year of their chemical studies.

Syllabus.

History of the Chemistry of Carbon—Determination of the Composition of Carbon Compounds—Empirical and Rational formulæ—Classification—Hydrocarbons — Alcohols — Carbohydrates — Aldehydes and Ketones—Acids—Simple and Compound Ethers—Compound Ammonias—Characteristics of Aromatic substances—Benzene and its derivatives—Naphthalene and Anthracene and their derivatives—Pyridine, Chinoline, and their derivatives—Dyes—Alkaloids—Animal and Vegetable Educts.

Special Lectures.

The Paraffin Industry—Brewing and Distilling—

Acetic Acid Manufacture—Soap Making and Candles —Sugar—Explosives—Artificial Colours and Dyes—The Alkaloids.

Text-books.—Armstrong's *Chemistry of the Carbon Compounds*. The following books are in the College Library, and may be consulted with advantage by the student:—Roscoe and Schorlemmer's *Organic Chemistry;* Schorlemmer's *Rise and Development of Organic Chemistry;* Watts' *Dictionary of Chemistry;* Remsen's *Organic Chemistry*.

This course covers the subject as prescribed for the Intermediate Examination in Medicine and the Final Examination in Science of the University of London.

Fee for the course, £3 3s.

ANALYTICAL AND PRACTICAL CHEMISTRY.

Laboratory Courses.

Professor W. Ramsay, Ph.D.

Lecturer and Demonstrator, Sydney Young, D.Sc.

The Laboratory is open daily, from 10 a.m. to 5 p.m., except on Saturdays, when it closes at 1 p.m. Instruction is given in the Laboratory on all branches of Practical Chemistry, including Qualitative and Quantitative Inorganic and Organic Analysis, the preparation of Chemical Products, and Inorganic and Organic Research. Special facilities will be afforded to those who desire to study Practical Chemistry as applied to the different processes employed in the Arts and Manufactures, and to Scouring, Bleaching, and Dyeing. The Laboratory will be under the immediate supervision of the Professor and of the Lecturer.

Laboratory work is required for the following Examinations:—Preliminary Scientific (M.B.), Intermediate Science and Intermediate Medicine Examinations of the University of London; and also for the B.Sc. Examination in Chemistry. Those proceeding for the Doctorate in Chemistry have special facilities for Research, and will receive every help.

Each student will be required to provide, at his own expense, a set of ordinary apparatus, at a cost of about 30s. Expensive apparatus, gas, fuel, water, and the ordinary reagents will be provided by the College. The cost of material for original research must be paid by the student.

Text-books.—For junior students: Ramsay's *Chemical Theory;* Jones's *Qualitative Analysis.* For advanced students: Fresenius' *Quantitative Analysis;* Crooke's *Select Processes;* Sutton's or Fleischer's *Volumetric Analysis.* A small library of chemical books is accessible at all times to students working in the Laboratory.

FEES IN GUINEAS—

	6 days a week.	5 days a week.	4 days a week.	3 days a week.	2 days a week.	1 day a week
For the Session...	17	15	13	10	7½	5
" two Terms ...	13	11	9	7½	5½	4
" one Term ...	7	6	5	4	3	2
" one Month...	3	3	2	2	1½	–

Students may, for convenience, arrange to divide their days of Laboratory Work into half-days.

A special course of lectures will be given during the first and second Terms on the Applications of Chemistry to every-day life, particulars as to which will be found under the head of Evening Classes.

CHEMICAL EXCURSIONS.

In order that students may have an opportunity of acquiring some knowledge of Applied Chemistry, excursions to some of the Mines and Manufactories of the neighbourhood will occasionally be made. They will be conducted by the Professor or by the Lecturer. Past or present students of the College desirous of taking part in these excursions are invited to apply to the Professor of Chemistry.

PHOTOGRAPHIC CHEMISTRY.

Lecturer, A. RICHARDSON, Ph.D.

Monday, 10—11.

A course of lectures will be given, which will cover the subject as prescribed for the Technological Examination of the City and Guilds of London Institute.

SYLLABUS.

Historical sketch—Composition and Nature of Light—Chemical Action of Light—Pyroxyline: its Preparation, and Physical and Chemical Properties—The Wet Process—Chemistry of Iron Development—Intensifying and Fixing the Photographic Image—Dry-Plate Processes—Alkaline Development—Printing Processes—Silver Prints—Theory of Toning—Printing by means of Salts of Iron, Chromium and Platinum—The Lens—Exposure—Use of Stops, &c.

Fee, £1 1s. for each Term.

PRACTICAL PHOTOGRAPHY.

The Photographic Laboratory is open from 10 to 5 every Wednesday. Instruction will be given in Dry-Plate Processes, Printing, Enlarging, and in Microscopic Photography.

Students will be required to provide their own cameras. Dry plates, chemicals, &c., are provided.

Fee, £3 3s. for each Term.

MATHEMATICS.

Lecturer, D. CODRINGTON SELMAN.

Instruction will be given in Mathematics by means of lectures and classes, under three divisions. There will also be a tutorial class chiefly for Engineering students, and a special class for Women.

DIVISION I.

The subjects taught in this division comprise the work required for the Matriculation Examination of the University of London, the Science and Art Department, the College of Preceptors, and Oxford and Cambridge Local Examinations; but the teaching is not restricted to a preparation for these Examinations.

The lectures are arranged as follows:

Monday, 12—1. Arithmetic and Logarithms.

Wednesday, 12—1. Euclid and Mensuration.

Friday, 12—1. Elementary Algebra.

TUTORIAL CLASS.

On Wednesday, from 2.30 to 4.30, a class will be held chiefly for Engineering students of this Division, to supplement the lectures and work examples and test papers. In the third Term, Trigonometry will be substituted for Arithmetic.

Text-books.—Lock's *Arithmetic; Euclid Revised*, by Nixon, Books I.—IV.; *Algebra*, C. Smith; Lock's *Trigonometry for Beginners*.

DIVISION II.

The subjects taught in this Division comprise the work for the Intermediate Examinations in Arts and in Science of the University of London. Students will be required to work a number of examination papers during each Term.

The lectures are arranged as follows:

Tuesday, 11—12. Algebra and Elementary Theory of Equations.

Thursday, 11—12. Geometry and Trigonometry.

Saturday, 11—12. Geometrical and Analytical Conic Sections.

Students of this Division may attend the Tutorial Class on Wednesday, from 2.30 to 4.30.

Text-books.—Todhunter's *Algebra;* Lock's *Trigonometry;* Burnside and Panton's *Theory of Equations;* Wilson's *Geometrical Conics;* and C. Smith's *Analytical Conics.*

DIVISION III.

Tuesday, Thursday, and Saturday, 9—10.

This course will comprise the work required for the B.A. and B.Sc. Examinations of the University of London, and will include:

Higher Algebra and Theory of Equations.

Higher Trigonometry, Plane and Spherical.

Co-ordinate Geometry of Two and Three Dimensions.

Differential and Integral Calculus and Differential Equations.

Higher Statics and Dynamics, and Hydromechanics.

During the first Term the lectures and class teaching will almost entirely deal with the Differential and Integral Calculus and Co-ordinate Geometry. In the second and third Terms the work will depend on the wants of students.

Text-books.—Williamson's *Differential and Integral Calculus;* Burnside and Panton's *Theory of Equations;* Lock's *Higher Trigonometry;* C. Smith's *Conic Sections and Solid Geometry;* Minchin's *Statics;* Williamson and Tarleton's *Dynamics;* Besant's *Hydromechanics.*

SPECIAL COURSE FOR WOMEN.

Monday, Wednesday, and Saturday, 11—12.

The work of this course will, as far as possible, be arranged to suit the individual wants of students; but is intended to prepare for Group C of the Cambridge Higher Local Examination and the Examinations of the University of London. Students will be required to work a number of papers.

The hours of this course can be altered to suit the convenience of students.

Fee for each course, £5 5s. for three Terms; £4 4s. for two consecutive Terms; £3 3s. for the first or second Term singly; £2 2s. for the third Term.

MECHANICS.

Lecturer, D. CODRINGTON SELMAN.

ELEMENTARY MATHEMATICAL COURSE.

STATICS, DYNAMICS, AND HYDROMECHANICS.

This course will comprise the Mechanics and Mixed Mathematics for the Intermediate Examinations in Arts and Science of the University of London. The instruction will be mainly of a tutorial character, and suited to the requirements of Engineering students of the second and third year, and will form a necessary introduction to the higher course in Division III. of Mathematics.

FIRST AND SECOND TERMS.

Tuesday, 12—1; Friday, 11—12.

STATICS.

Statics of a Particle.—Measurement and Graphic Representation of Force. Parallelogram, Triangle, and Polygon of Forces. Theorems relating to moments about a point and a line. Conditions of equilibrium.

Statics of a System of Particles.—Conditions of equilibrium for Coplanar Forces. Resultant of two or more parallel forces. Parallelogram law of Couples. Poinsot's Central Axis.

Statics of Constrained Bodies.—Bending Moments. Loaded Beams. Tension and equilibrium of a string on a smooth surface. Funicular Polygon. Stress Diagrams.

Theorems relating to Centre of Mass.—Centroids. Centroid of a Triangle, Pyramid, Arc of Circle, and Zone of Sphere. Theorems of Pappus.

Friction.—Laws of Friction. Limiting Friction. Tension of a string on a rough surface.

Principal of Virtual Work.—Position of stability and instability. General theorem relating to Potential Energy.

Machines.—Lever, Wheel and Axle, Systems of Pulleys, Inclined Plane, Screw, Steelyard, Roberval's Balance, Differential Combinations.

Calculations relating to Stress and Strain in Elastic Solids produced by External Forces.

Dynamics.

Dynamics of a Particle.—Kinematics. Laws of Motion. Parallelogram of Velocities and Accelerations. Hodograph. Relative Motion. Angular Motion. Harmonic Motion. Elliptic Motion. Parabolic Motion. Force. Mass. Density. Weight. Attwood's Machine. Value of "g." Gravitation. Newton's Law of Attraction. Fundamental Units. Derived Units. Dimensions of Units.

Uniform and Uniformly Accelerated Motion.—General Formulæ. Geometrical Representation. Motion down Inclined Plane. Kinetic Energy and Work. Rate of Work and Horse-power. Conservation of Energy. Projectiles.

Collision.—Nature of an impulse. Elasticity. Direct and Oblique Impact. Force of Compression and Restitution. Motion of Chains. Kinetic Energy after Impact.

Motion about a Fixed Axis.—Instantaneous Axis of Rotation. Three-bar Motion. Cycloidal Motion. The Pendulum. Centres of Oscillation and Suspension. Determination of "g." Pressure on Fixed Axis. Theory of Vortices. The Anemometer.

THIRD TERM.

Tuesday and Friday, 11—12.

HYDROMECHANICS.

Fundamental Properties of Fluids.—Density. Specific Gravity. Pressure at different points of a Fluid. Centre of Pressure. Transmission of Pressure. Syphon.

Equilibrium of a Floating Body.—Finite Displacements. Surface of Buoyancy. Metacentre. Oscillations.

Hydraulic Machines.—Diving Bell. Pumps. Bramah's Press. Turbines. Hydraulic Cranes. Accumulators.

Rotation of Fluids.—Hydraulic Governors. Surfaces of Equal Pressure. Whole Pressure. Wave Motion.

Text-books.—*Elementary Statics*, Greaves; *Elementary Dynamics*, Garnett; *Elementary Hydrostatics*, Besant; Goodeve's *Principles of Mechanics;* Clifford's *Dynamic; Statics*, Minchin, Vol. I.

Fee, £4 4s. for three Terms; £3 3s. for two Terms; £2 2s. for one Term.

EXPERIMENTAL PHYSICS.

Professor, J. RYAN, M.A., D.Sc.

Lecturer, A. P. CHATTOCK.

ELEMENTARY COURSE (FIRST YEAR).

Tuesday and Thursday, 12—1.

FIRST TERM.—MECHANICS, HYDROMECHANICS, ETC.

Mechanics.—Force. Velocity and Acceleration. The Laws of Motion. Motion of Falling Bodies. Composition and Resolution of Velocities and Accelerations. Equilibrium, Composition, and Resolution of Forces. Parallelogram, Triangle, and Polygon

of Forces. Mechanical Advantage. Simple Machines. Centre of Gravity. Friction. Elasticity. Pendulums. Work. Energy. Horse-power.

Hydromechanics and Pneumatics.—Pressure of Liquids and Gases—its equal diffusion and variation with the depth. Equilibrium of Liquids and Gases. Specific Gravity, and methods of determining it. The Barometer, Siphon, Common Pump, and Forcing Pump. Air-Pumps: *Mechanical*—Otto von Guericke's, Boyle's, Bianchi's; *Mercurial*—Statical and Dynamical, Sprengel's; Condensing Air-Pumps. Capillarity.

SECOND TERM.—HEAT.

Heat.—Its Sources. Effects of Heat on the Physical Properties of Bodies. The Solid, Liquid, and Gaseous conditions of Matter. Their dependance on Pressure and Temperature. Expansion, Apparent and Absolute. Definitions of Heat and Temperature. Construction of Instruments for the measurement of Heat and of Temperature. Calorimeters. Thermometers. Pyrometers. The Mercurial Thermometer. Scales: Fahrenheit, Celsius, and Réaumur. Law of Gay Lussac. Air Thermometer. Absolute Zero of Temperature. Specific, and Latent or Potential Heat. Phenomena of Fusion, Crystallisation, Ebullition, Evaporation, Condensation, Conduction, Convection, Radiation.

THIRD TERM.—GEOMETRICAL OPTICS.

Velocity and Intensity of Light. Photometry. Laws of Reflection and Refraction. Dispersion of Light. Formation of Images by Lenses and Mirrors. Determination of Focal Distances. Calculation of Optical Combinations by Gauss's method. The Telescope. The Microscope.

This course covers the matter comprised in the subject of Natural Philosophy as prescribed for the

Matriculation Examination of the University of London.

Text-books.—Lodge's *Elementary Mechanics* (W. and R. Chambers); Garnett's *Heat* (Deighton, Bell, and Co.); Aldis's *Geometrical Optics* (Deighton, Bell, and Co.).

Fee, £5 5s. for three Terms; £4 4s. for two consecutive Terms; £3 3s. for the first or second Term singly; £2 2s. for the third Term.

Intermediate Course (Second Year).

Professor, J. Ryan, M.A., D.Sc.

Lecturer, A. P. Chattock.

Wednesday and Friday, 11—12.

First Term.—General Physics, Magnetism, Electrostatics.

General Physics.—Fundamental and Derived Units of Measurement. The Centimetre-Gramme-Second System. The Chief Forces of Nature. General relations of Matter and Energy. The Conservation and Transmutation of Energy. Central Forces. Universal Gravitation. Theory of Potential. Specific Gravity: modes of determination. Diffusion of Liquids and Gases. Elasticity of Solids, Liquids, and Gases. Particular problems in Hydrostatics and Pneumatics.

Magnetism.—Magnets, Natural and Artificial. The Compass and Dipping Needle. Measurement of Magnetic Forces. Terrestrial Magnetism. Diamagnetism.

Electrostatics.—Fundamental Experiments on Electrostatic Attractions and Repulsions. Notions of Quantity and Distribution. Phenomena of Induction. Electrical Machines. The Leyden Jar. Measurement of Potential, Capacity, and Quantity. Electrometers. Phenomena of Discharge.

SECOND TERM.—ELECTRIC CURRENTS, APPLICATIONS, THERMODYNAMICS, HEAT.

Electric Currents.— Mechanical, Thermal, and Chemical methods of generating Electric Currents. The Voltaic Cell. Batteries. Galvanometers. Electromagnetism. Action between Magnets and Currents. Phenomena of Induced Currents. The Induction Coil. Measurement of Resistance and Electromotive Force.

Applications.—Chemical actions of the Current. Electrolysis and Electroplating. Thermo-Electricity. Heating effects of the Current. Electric Lighting. Arc and Incandescence Lamps. Accumulators. Telegraphs and Telephones. Dynamo-Electric Machinery. Electro-motors. Transmission of Power by Electricity.

Thermodynamics.—Mechanical Equivalent of Heat. Conditions of Heat Transference. The Law of Conservation of Energy as a fundamental principle of Physics. The Dissipation of Energy.

Heat.—Newton's Law of Cooling. Experiments of Dulong and Petit. Change of State. Liquefaction. Solidification. Vaporisation. Tension of Vapours. Dalton's Laws of Evaporation. Andrews' Experiments. The Critical Point. Changes in Melting and Boiling Points produced by Pressure. Measurement of Coefficients of Expansion and other Constants.

THIRD TERM.—ACOUSTICS, PHYSICAL OPTICS, RADIATION.

Acoustics.—Production and Propagation of Sound Waves. Velocity of Sound. Dependance on Temperature. Effect of Changes of Elasticity and Density in the Medium. Newton's Law of Velocity and Laplace's modification of it. Reflection and Refraction of Sound. Production of Harmonics, and their relation to the Fundamental. Musical Scales.

Temperament. Vibrations of Rods, Strings, and Columns of Air. Sensitive Flames. Methods of determining the Pitch of Musical Sounds. The Siren. Resonance. Resonators. Analysis of Complex Sounds. Acoustical Interference. Beats. Physical Theory of Music. The Vowel Sounds. Phonoscopes and Phonographs. The Human Ear.

Physical Optics.—Theories of Propagation of Light. Measurement of Velocity of Light. Photometry. Refraction through Lenses, including formation of Images. Focal Lines. Caustics. Spherical Aberration. Chromatic Aberration. Optical Description of Eye and Theory of Unaided Vision. Vision through Lenses, Microscopes, and Telescopes. Galileo's, Newton's, Herschel's, and Gregory's Telescopes. Wave Theory of Light: its explanation of Reflection and Refraction. Huygens' Principle. Measurement of Focal Lengths of Mirrors and Lenses, and of Indices of Refraction.

Radiation.—The Law of the Inverse Square of the Distance. Intrinsic Brightness and Intensity of Illumination. Dispersion of Light. The Rainbow. The Spectroscope. The Spectrometer. Spectrum Analysis. Phosphorescence and Fluorescence. Radiation and Absorption of Heat Rays. Calorescence. Theory of Exchanges. Variation with Temperature of Quality and Quantity of Radiation.

This course meets the requirements of the Intermediate Examination in Science (Honours) of the University of London.

Text-books.—The text-books which students are advised to purchase are, S. P. Thompson's *Elementary Lessons in Electricity and Magnetism* (Macmillan and Co.), Balfour Stewart's *Heat* (Clar. Press), and Everett's edition of Deschanel's *Natural Philosophy, Vol. IV., Sound and Light* (Blackie and Son). The following works, most of which are in the College Library, are recommended for constant reference and reading: Thomson and Tait's *Natural Philosophy;* Clerk Maxwell's *Theory of Heat;* Shann's *Heat;* Maxwell's *Elementary Treatise on Electricity,* edited by W. Garnett; Müller-Fouillet's *Physik;* Jamin and Bouty's *Cours de Physique;* Gordon's *Physical Treatise on Electricity and Magnetism.*

Fee, £5 5s. for three Terms; £4 4s. for two consecutive Terms; £3 3s. for the first or second Term singly; £2 2s. for the third Term.

Advanced Course (Third Year).

Professor, J. Ryan, M.A., D.Sc.

Lecturer, A. P. Chattock.

Monday and Wednesday, 3—4.

An Advanced Course of about forty lectures on Physics will be given during the first and second Terms, on Mondays and Wednesdays at 3. The course will comprise the following subjects:—

Heat.—Methods of measuring Specific Heat, Tension of Vapour, and Latent Heat, with chief results that have been obtained. Regnault's Experiments. Measurement of Coefficients of Conduction of Solids, and their variation with temperature. Fourier's Conclusions. Experiments of Despretz, Forbes, Wiedemann and Franz, Ångström and Thalen. Measurements of Conductivity of Liquids and Gases. Distinction between Thermometric Conductivity and Calorimetric Conductivity. The Kinetic Theory of Gases, and deductions therefrom.

Thermodynamics.—History of the Science. Its fundamental principles. Various statements of the Second Law. The Theory of the Dissipation of Energy. Carnot's Principle: his Cycles, and test of a Perfect Engine (1824).

Thomson's Absolute Thermodynamic Scale (1848). Joule's Experiments. Entropy of Clausius and Maxwell. Thermodynamic Function of Rankine. Rankine's treatment of the subject. Specific Heat of Saturated Steam, negative. Influence of Pressure

on the Melting Point of Ice, and on Change of State in general. Other predictions from Theory.

Applications of the principles to Radiation, and other branches of Science.

Transformations of Energy. The availability of Energy. Modern Heat Engines compared with Carnot's ideal.

Acoustics.—Indirect Methods of measuring the Velocity of Sound. Kundt's Experiments. Vibrations of Plates and Membranes. Composition of Vibrations. Beats. Optical Methods of Examination. Lissajous' Experiments. Sensitive Flames. Sensitive Smoke and Water Jets. Resultant Tones. Determination of Absolute Pitch. Diffraction of Sound. Phonoscopes and Phonographs. Radiophony. The Photophone.

Physical Optics.—Conditions of Achromatism in thin Compound Prisms and Lenses. Ramsden's Eyepiece. Huygens' Eyepiece. Measurement of magnifying power of Microscopes and Telescopes. Measurement of Dispersive Power of Media. Spectrum Analysis. Selective Absorption. Phenomena of Interference and Diffraction. Newton's Rings. Fresnel's Mirror and Biprism. The Optical Bench. Double Refraction and Polarisation of Light. Nicol's Prism. Interference of Polarised Light. Circular Polarisation. Elliptical Polarisation. Optic Axes of Crystals. Wave Surface. Conical Refraction. Saccharimeters and Polariscopes. Electro-optics. The Electro-magnetic Theory of Light. Determination of Velocity of Light by comparison of Electrostatic and Electromagnetic Units.

Magnetism.—Magnetic Moments, and Methods of comparing them. The Methods of determining the Dip, Total Intensity, and Magnetic Declination at any place. Secular and Diurnal Variations. Disturbances and their Laws. Connection between

Magnetic Disturbances and other Phenomena. Diamagnetism.

Electricity.—Measurement of Electrical Density, Capacity, Quantity, Potential, Electro-motive Force, Current, Resistance, Mutual Induction, and Self-induction. Theory of the Voltaic Battery. Construction of Electrical Standards. The Laws of the Distribution of Currents, and of their action on one another. The Transmission of Electrical Energy. The choice and determination of Electrical and Magnetic Units. Ratio of the two Systems of Units.

Physical Measurements.—Errors of Observation. Elimination of these. Method of least squares. Graphic Methods. Moment of Inertia. Friction. Torsion. Elasticity. Determination of Coefficients.

The subjects comprised in this and the preceding course cover those prescribed for candidates in Physics (Honours) for the degree of Bachelor of Science in the University of London.

Fee, two Terms, £4 4s.; one Term, £3 3s

ELECTRO-TECHNICS.

Professor, J. Ryan, M.A., D.Sc.

Lecturer, A. P. Chattock.

Monday and Friday, 4—5.

This course will be delivered during the second and third Terms.

Syllabus.

Dynamo-electric Machinery.—Magneto-electric Induction. Design and Construction of Armatures and Field Magnets. Geometrical Methods, Characteristic Curves, &c. Arrangements for Regulation of Speed, Current, and Potential.

Incandescence Lamps.—Theory and Construction.

Most economical Potential Difference. Various Systems of Grouping.

Arc Lamps.—Behaviour of the Arc. Construction of Regulators. Electric Candles. Cut-outs, Shunts, Accessories, &c.

Photometry.—Light Standards. Photometers.

Distribution of Electricity and Transmission of Power.—Electric Motors: their Design, Construction and Regulation. Telpherage. Electrical Railways. Economy of Conductors. Varieties of Electrical Mains.

Accumulators.—Theory of these, and their various types.

Measuring Instruments.—Theory, Construction, and Use. Transmission and Brake Dynamometers. Ammeters and Voltmeters. Theory of Voltmeter Winding. Wattmeters. Ohmmeters. Electric Meters. Measurement of Intense Magnetic Fields.

Telegraphic and Telephonic Engineering.—Chief types of Instruments. Construction and Testing of Lines, &c.

Fee, £4 4s. for two Terms; £3 3s. for one Term.

PHYSICAL AND ELECTRICAL LABORATORY.

Professor, J. Ryan, M.A., D.Sc.

Demonstrator, A. P. Chattock.

PRACTICAL PHYSICS—LABORATORY INSTRUCTION.

The Physical and Electrical Laboratory is open daily from 10—5, except on Saturdays.

A general course of Laboratory Instruction will be carried on under the immediate supervision of the Professor and Demonstrator. The object of this course is to enable students to acquire skill in the use of instruments for physical measurement and research, and practical acquaintance with general

experimental work. The course includes the verification of the more general laws of Physics, including Acoustics, Optics, Heat, Magnetism, and Electricity.

A special course of instruction in Electricity will be given to students working in the *Electrical Laboratory*. They will be instructed in the principles and practice of Electrical Testing, in the measurement of Electromotive Force, Resistance, Electric Energy, and in the efficiency of Electrical Machinery. Instruction will also be given in the management and testing of Dynamo-electric Machinery, Electric Arc Lamps and Incandescence Lamps, and in the management and construction of Electrical Instruments and Appliances in general use.

Any damage to apparatus arising from carelessness must be made good.

Students entering for Laboratory work will deposit 10/- in the hands of the Registrar as caution-money, to be returned at the close of the Session.

Students may for convenience arrange to divide their days of Laboratory work into half-days.

FEES IN GUINEAS—	5 days a week.	4 days a week.	3 days a week.	2 days a week.	1 day a week.
For the Session ...	18	15	11½	8½	5
" two Terms ...	13	11	8½	6	4
" one Term ...	7	6	4½	3½	2

ENGINEERING.

Professor, J. Ryan, M.A., D.Sc., M.I.M.E.

Lecturer, D. Codrington Selman.

FIRST YEAR.

First Term.—Tuesday and Thursday, 12—1.

Experimental Course of Elementary Mechanics, Hydromechanics, &c.

Force. Velocity and Acceleration. The Laws of Motion. The Motion of Falling Bodies. Com-

position and Resolution of Velocities and Accelerations. The Equilibrium, Composition and Resolution of Forces. The Parallelogram, Triangle and Polygon of Forces, &c. Mechanical Advantage. The Simple Machines. Centre of Gravity. Pendulums. Centre of Inertia. *Work:* its Principles and Application to Machines. The Diagram of Work. *Energy*. *Horse-power*. Dimensions of Units. Friction: its Laws and its Applications. The Preparation of Plane Surfaces. Applications of the Screw. The Elements of Hydromechanics. The Pressure of Water on Dock-gates, Walls and Embankments. Lifting and Force Pumps. The Hydraulic Press. Hydraulic Cranes and Motors. The Laws of Equilibrium of Liquids and Gases. The Equilibrium of Floating Bodies. The Pressure of the Atmosphere. The Mercury and Aneroid Barometers. Air-Pumps: Mechanical, Boyles', Bianchi's, &c.; Mercurial, Statical and Dynamical. Condensing Air-Pumps. Pressure and Vacuum Gauges.

SECOND TERM.—Tuesday and Thursday, 10—11.

Applied Mechanics and Strength of Materials.—Stress, Strain, Factor of Safety, Rigidity, Pliability, Elasticity, Resilience, &c. Nature of the loads to which a structure is subjected. Conditions of equilibrium of a structure. The elements of Graphical Statics. Reciprocal Diagrams of Forces and of Stresses. The Funicular Polygon. Graphical Solution of various examples of Roof and Bridge Trusses. The nature of internal resistance of various parts of a structure. Live and dead loads. Fatigue of materials. Testing Machines. Timber. Cast Iron and Castings. Wrought Iron and its uses. The hardening and tempering of Steel. Other metals and different kinds of alloys. Simple calculations connected with the design of Beams and Girders. Beams of uniform strength.

Strength of Columns and of Structures subjected to internal pressure.

THIRD TERM.—Tuesday and Thursday, 10—11.

CIVIL ENGINEERING.

Preservation of Timber. Artificial Stones and Hydraulic Cements. Brickwork. Masonry. The stability of Walls and Buttresses. Sub-structure and Foundations. Piles and Pile Driving. Coffer-dams. Common Roads: Material, Construction, Maintenance and Draining. Stone, Wood, and Asphalt Pavement. Railways: Broad and Narrow Gauge. Different kinds of Rails. Switches and Crossings. Tunnels and Embankments. Tram-ways: the different systems of horse and steam traction. Classification of Canals. The Laying out and construction of Locks. Foreign Canals. Ship-Canals. Streams and Rivers. Measure-ments of Velocity at different cross sections. Floods. Different kinds of facing for Banks. Construction of Dams and Weirs. Marine Engineering. Sea Defences and Embankments. Breakwaters. Piers. Harbours. Docks. Supply of Water to Towns. Rain, spring, well and river water. Mode of distri-bution of water supply. Drainage of Lands and Towns. Sanitary Engineering. Ventilation. Re-clamation and Irrigation of Land.

Mining.—Statistics. The chief Coal-Fields. Preliminary trials. Methods of Boring. "Winning" and "Getting." "Pillar" and "Long-Wall" Work. Relative advantages. Examples: (1) Scotland, Northumberland, and South Wales; (2) Derby-shire, &c. Coal-cutting Machinery. Blasting and Wedging. Metalliferous Mines, especially Iron. Nature and occurrence of Deposits. Prospecting. Driving Levels and Drifts. Sinking Shafts. Securing Excavations. Open Work. Hydraulic Mining.

Hauling and Winding. Drainage. Ventilation. Lighting.

Text-books. — First Term: Lodge's *Elementary Mechanics* (Chambers), and Goodeve's *Principles of Mechanics* (Longmans). Second Term: Anderson's *Strength of Materials* (Longmans), and Alexander's *Elementary Applied Mechanics*, Vol. I. (Macmillan & Co.). Third Term: Law and Burnell's *Civil Engineering*.

The following works may be consulted with advantage:—First Term: Ball's *Experimental Mechanics*. Second Term: Bow's *Economics of Construction*. Third Term: Harcourt's *Rivers and Canals*.

SECOND YEAR.

FIRST TERM.—Tuesday and Thursday, 10—11.

Prime Movers. — (1.) Sources of Energy in Nature. Fuel, Wind, Water, and Tides. Transformations of Energy. Efficiency of Motors. (2.) Theory of Heat Engines. Laws of Heat Transference. The Conduction of Heat. Elementary Thermodynamics. Joule's Equivalent. (3.) Nature and Properties of Steam. Investigations of Watt and Regnault. Steam Boilers. The History of the Steam Engine: its development. The Engines of Savary, Newcomen, and Watt. Varieties of Engines—Stationary, Locomotive, and Marine. The Beam Engine. Pumping Engines. Compound Engines. Triple Expansion Engines. The Injector. The Indicator. Nominal, Indicated, and Nett Horse-power. (4.) Hot-air Engines—Stirling and Ericsson. (5.) Gas Engines.

SECOND TERM.—Tuesday and Thursday, 12—1.

Kinematics of Machinery.—History of the Science. Lower and Higher Pairs of Elements. Kinematic Links and Chains. Force and Pair Closure. Centroids and Axoids. Toothed Wheels. Bevil and Screw Gearing. The notation and symbols of Reuleaux. Kinematic Analysis. Formulas of the Simple Machines, and of various other Mechanisms. Various examples of the Quadric

Crank Chain found in Parallel and Straight Line Motions, Sewing Machines, Printing and Engraving Machines, Shearing Machines, Power Looms, Reversing and Quick Return Motions, etc. Various examples of the Slider Crank Chain in Prime Movers and other Machines. Chamber Crank Trains and Chamber Wheel Trains. Wheels in Trains. Epicyclic Trains. The nature of the Constructive elements of Machinery. Free and fast click Trains, Cams and Ratchets. Differential Screw and Pulley. Apparatus for Measuring and for Regulating the rate of Motion, such as Escapements of Clocks and Watches, and Governors. The Analysis of miscellaneous contrivances and of complete Machines, such as for Rope-making and other purposes. Kinematic Synthesis.

THIRD TERM.—Monday and Friday, 12—1.

CIVIL ENGINEERING.

The lectures during this Term will treat more fully of the subjects of the third Term in the first year, as well as—

Internal stress of materials, and compound state of strain. The ellipse of stress. Stability of Earthwork and of Retaining Walls. The theory and relative advantages of various forms of Testing Machines, and the manner of conducting Experiments and of interpreting results. The results obtained with the more important materials by various experimenters, both with live and dead loads. The employment of Steel in modern structures. Problems connected with Beams and Girders. Beams of greatest strength for different kinds of loading. Girders with parallel flanges connected by vertical and diagonal bracing. Braced Girders with oblique or curved flanges, including the crescent and bow-string Girder and braced Arch. Modes of finding deflection. Continuous Girders. Weight

of Girders and limiting span. Estimation of Girder work. Cast Iron Bridges. Different forms of Suspension Bridges. Movable and Swing Bridges.

Principles of Mining.—Surveying Underground. Compass and Theodolite. Laying out Workings. Sinking of Shafts, through Quicksands and Water-bearing Strata. Drainage. Adit-Levels. Pumps and Pumping Engines. Ventilation—Natural and Artificial. Furnaces. Mechanical means: Fans, as Guibal's, &c. Aspirators. Distribution of Air. Ansell's Indicator. Lighting: Safety Lamps. Haulage Systems: Tail-rope and Endless Chain or Rope. Winding Engines. Safety Catches. Surface Arrangements.

The following works may be used for reference during the above courses:—

For all three Terms.—*Applied Mechanics*, James H. Cotterill (Macmillan and Co.). *Mechanics of Engineering*, Weisbach.

For the First Term.—*The Steam Engine, and other Prime Movers*, Rankine. *The Steam Engine*, Goodeve. *The Use of the Indicator, &c.*, Graham.

For the Second Term.—*Kinematics of Machinery*, Reuleaux (translated and edited by Prof. Kennedy). *Elements of Mechanism*, Goodeve.

For the Third Term.—*The Theory of Strains in Girders*, Stoney (Longmans, Green and Co.). *The Principles of Graphic Statics*, G. S. Clarke (Spon). *A Manual of Civil Engineering*, Rankine (Griffin).

THIRD YEAR.

Monday and Friday, 12—1.

First Term.

Dynamometers.—The Theory and Construction of the different forms of Absorption and Transmission Dynamometers.

Transmission of Power.—Discussion of the Methods: Mechanical, Pneumatic, Hydraulic, and Electrical. The advantages and disadvantages of each. Their applicability to special purposes.

Machine Design.—The Strength and Behaviour of Materials under the action of Loads, with practical Demonstrations in the Engineering Laboratory by means of the large Testing Machine. The Strength and Form of Riveted Joints. The Strength and Construction of Pipes and Cylinders. The Strength and Form of the Constructive Elements of Machinery. The Form and Dimensions of Valves, and Design of Valve-gears. Specifications. Estimates, &c.

Manufacturing Processes.—Iron and Steel. Dependance of their mechanical properties on physical treatment and chemical composition. Resistance to variously applied loads. Power of resisting wear. Soft Steel *v.* Hard Steel. The relative merits of Iron and Steel for various purposes. The Steel Age. Comparison of the products of the Siemens, Bessemer (acid), and Gilchrist Processes. Crucible Steel. Recent Researches and Improvements. The results of Pressure and of Hammering. Whitworth's Process. Tool Steel. The Effects of Tungsten, Chromium, &c. Other Metals and Alloys: their resisting and wearing properties. Gun-metal, Brass, White Metal, Phosphor Bronze, &c. Effects of Rolling, Wiredrawing and other mechanical treatment. The Hardening and Tempering of Tools, Springs, &c. Case-hardening. Malleable Cast Iron.

Casting in Iron, Steel, Gun-metal, &c. Annealing. Workshop manipulation.

Hydraulic Engineering.—The estimation of the amount of Rainfall in a district available for purposes of Power: its collection and supply. The Height, Extent, and Curve of Swell or Backwater. Reservoirs and Reservoir Sluices. Motion of Water in Conduit Pipes, and Loss of Energy by Eddies and Broken Water. Theory of Overshot and other forms of Vertical Water-wheels. Friction of Water-wheels, and their total and effective delivery. Theory

of various forms of Horizontal Water-wheels, including impact and tub-wheels, tangential wheels, jet turbines, reaction wheels; inward, parallel, outward-flow, and screw turbines. Reciprocating Water-Pressure Engines: their theoretical and actual efficiency, and the valves and regulators of different kinds employed with them.

The theory of Wind-wheels, and mechanical efficiency of Windmills.

The subjects treated in this Term will be modified, if necessary, to suit the majority of the third-year students.

Second Term.

The lectures in this Term will consist of a more advanced treatment of the subjects dealt with in the first Term of the second year course.

Thermodynamics.—Its Laws. History of the Science. Various statements of the Second Law. Transformations of Energy. The theory of the Dissipation of Energy. Carnot's principle: his Cycles and test of a Perfect Engine (1824). Thomson's absolute Thermodynamic Scale (1848). The availability of Energy. Joule's Experiments. Entropy of Clausius and Maxwell—Thermodynamic Function of Rankine. Influence of pressure on melting points, and on change of state in general.

Modern Heat Engines: Steam, Air and Gas compared with Carnot's ideal. Electrical Engines.

Steam.—Its properties as determined by experiment. The results of Regnault and others. Saturated Steam. Superheated Steam. The relations between Pressure, Density, and Temperature of Steam.

Calculations of the efficiency, &c., of Furnaces and Boilers. Explosions.

Feed-pumps. Injectors. Condensers. The Surface Condenser. The Ejector Condenser.

The theory of the Steam Engine. The various types: their objects and efficiency. Indicator Diagrams, and Diagrams of effort and work upon the Crank-pin. Valves and Valve-gearing. Link Motions. The Slide Valve. Expansion Valves, &c. Dynamometers. Fly-wheels. Governors, &c. The Cylinder. Double and Treble Cylinders. Oscillating Cylinders. The Steam Jacket. Behaviour of Steam in the Cylinder. The advantages of Compound Engines. Triple Expansion Engines. Rotary Engines. The Disc Engine. The Tower Spherical Engine. The "Fielding" Engine. The Experimental Testing of Steam Engines in various ways. The results.

De Pambour's theory. Velocity of maximum useful effect.

The theory of the Gas Engine. Air Engines.

Text-books.—*Mechanics of Engineering*, Weisbach (Wiley and Sons, New York). *Elements of Machine Design*, Unwin (Longmans).

Works for Reference.—*The Mechanical Theory of Heat*, Clausius. *Fuel and Water*, Schwackhöfer and Browne. *A Treatise on Steam Boilers*, Wilson. *The Steam Engine*, Cotterill. *Manual of Marine Engineering*, Seaton. *The Steam Engine and other Prime Movers*, Rankine. Various Papers in *Minutes of Proceedings Inst. C.E. and M.E.* (in the College Library).

Fee for each course, £7 7s. for three Terms; £5 5s. for two consecutive Terms; £3 3s. for a single Term.

ENGINEERING LABORATORY AND WORKSHOP.

Professor J. Ryan, M.A., D.Sc.

Demonstrator,

ENGINEERING LABORATORY.

The instruction in the Engineering Laboratory is intended to supply that necessary information and

experience which it is not, as a rule, possible to acquire in the ordinary routine of Engineering works or offices. With this view an opportunity will be afforded to students of dealing with various instruments of precision, and of gaining a scientific knowledge of the nature, properties, and strength of materials, as well as of the mode of determining the efficiency of Machines and Prime Movers. In addition to this, the simple laws of Mechanics will be verified by means of suitable apparatus.

1. The Laboratory is provided with a powerful Testing Machine, by Messrs. J. Buckton and Co., Leeds, capable of exerting upon the test piece a force of 50 tons.

By means of this Machine the nature and strength of the various materials employed in construction may be examined by means of experiments upon tension, compression, torsion, shearing, bending, deflection, and cross-breaking, and the laws of simple beams and girders verified.

The complete testing of iron and steel, cement and other materials, in the form of rods, bars, plates, pipes, and cubes, has been recently undertaken and performed in the Laboratory for the Manufacturers of the neighbourhood. Several Engineers have already availed themselves of this opportunity of having important materials tested in Bristol instead of sending them to London, as heretofore, and still more extended usefulness is anticipated for this undertaking.

2. Apparatus is provided for experiments upon Friction, and for the testing of Lubricants and Pressure-gauges.

3. Experiments illustrating the Elasticity of Metals and the general principles of Mechanics form part of this course.

4. Dynamo-electric machinery and Electrical testing instruments are also provided.

5. At present this Department is provided with a Gas Engine, which supplies the power necessary for making dynamometrical experiments. Until it is possible to obtain a Steam Engine and Boiler, by which matters such as the consumption of Fuel and Steam may be experimentally treated, experiments will be made upon certain Engines at Works in the city, permission for doing which has kindly been granted.

Fee (eight hours a week), £7 7s. for three Terms; £5 5s. for two Terms; £3 3s. for one Term.

WORKSHOP.

The Workshop is intended to afford, to those who may wish to avail themselves of it, an opportunity of obtaining a practical acquaintance with the use of tools and machinery. At the same time it must be understood that such instruction cannot take the place of the six months' course in Engineering works, which is part of the scheme of Mechanical Engineering, or of the practical experience which must eventually be acquired in Electrical works by students of Electrical Engineering.

Instruction will be given in the following subjects: Carpentering and the use of carpentering tools. Filing and Fitting. In the use of the forge and smiths' tools, and in the hardening and tempering of steel and the case-hardening of iron. Moulding and casting of gun-metal and other alloys on a small scale. Hand-turning. The use of the self-acting lathe for turning, boring, and screw-cutting. The preparation of standard gauges, of plane surfaces, and of cutting tools.

Students will be assisted to construct the apparatus required by them for their own use in the various departments of the College: the work for electrical students being such as galvanometers, switches, Wheatstone bridges, resistance-boxes, elec-

trical bells and batteries, telephones, microphones, small dynamo-electric machines, and other instruments.

Fee (six hours a week), £4 4s. for three Terms; £3 3s. for two Terms; £2 2s. for one Term.

Fee for the Workshop (six hours a week) and for the Engineering Laboratory (eight hours a week) combined, £10 10s. for three Terms; £7 7s. for two Terms; £4 4s. for one Term.

MACHINE DESIGN AND DRAWING.

Professor J. RYAN, M.A., D.Sc.

Lecturer, D. CODRINGTON SELMAN.

Monday and Friday, 2—4.

FIRST YEAR.

(1.) The preparation of tracings and finished drawings. Drawing to scale and from models; also from actual machines and portions of machines.

(2.) Graphic modes of representing results. The working out of simple diagrams of stress in connection with the class in Engineering.

SECOND YEAR.

(1.) The design and drawing of various parts of machines from given data or from actual measurement.

(2.) The design of various forms of Girder Bridges. Graphic methods of calculation.

THIRD YEAR.

(1.) The design and drawing of details of machinery and complete machines from given data.

(2.) The design and drawing of Girder Bridges and Roofs.

(3.) On Wednesday afternoons a course of Lectures on the Slide Valve and Valve Gears will be given from 2 to 3 during the first Term, and a course on Graphic Statics during the second Term.

Text-books.—Second Year, Unwin's *Elements of Machine Design*. Third Year, *Treatise on Valve Gears*, Zeuner. Alexander and Thomson's *Applied Mechanics*, Part II.

Fee for each year's course, £5 5s. for two Terms; £3 3s. for one Term.

GEOMETRICAL DRAWING.

Professor J. RYAN, M.A., D.Sc.

Lecturer, D. CODRINGTON SELMAN.

Tuesday and Thursday, 2—4.

A course of forty lessons in Plane Geometrical Drawing and the application of Descriptive Solid Geometry will be given during the first and second Terms. The course of instruction will include the following subjects:

Plane Geometry.—The Construction of Scales. The Description of Polygons. The Construction of the Ellipse, Parabola, Hyperbola, and other Curves which are the loci of points under given conditions. The transformation of Areas. The Planimeter.

Solid Geometry.—The Representation of Points and Lines in Space, and also of Simple Solids upon a plane surface by Orthographic Projection. Use of Scales of Slope. Penetrations. Developments. Shadows. Isometric Projection and the elements of Radial or Perspective Projection.

Text-book.—Angel's *Practical Geometry and Projection* (Collins, Son and Co.); Sydenham Clarke's *Practical Geometry*.

Fee, for two Terms, £4 4s.; one Term, £3 3s.

SURVEYING.

Professor J. RYAN, M.A., D.Sc.

Lecturer, D. CODRINGTON SELMAN.

ELEMENTARY COURSE.

Wednesday, 2—5; Friday, 2—4.

This course will be taken during the third Term. Wednesday afternoon will be devoted to practical instruction in the use of Surveying and Levelling Instruments, the keeping of Field Level Books, the demarcation of Survey points, and to *Field Practice* in the neighbourhood. Friday afternoon will be devoted to the theory of Surveying, and to the plotting of the Field work.

Text-book.—*Land and Engineering Surveying*, T. Baker (Weale's Series).

Fee, £3 3s.

ADVANCED COURSE.

Tuesday and Thursday, 2—4.

An advanced course will be given during the third Term on the above days in the theory and practice of Surveying and Levelling, including a discussion of the various methods of Surveying with Chain, Telemeter, Plane Table, Compass, Sextant, and Theodolite; of Levelling operations and Contouring, and the sources of error in Levelling; of Setting out Embankments, Cuttings and Tunnels, and Ranging Curves for Railway work; of Route Surveys by Land. Also the correction and adjustment of both Surveying and Levelling Instruments.

An afternoon will be devoted once a week to Field Practice.

Text-book.—*Aid to Survey Practice*, Jackson (Crosby, Lockwood, and Co.)

Fee, £3 3s.

GEOLOGY.

GENERAL GEOLOGICAL COURSE.

Professor C. Lloyd Morgan.

Monday, Wednesday, and Friday, 4—5.

FIRST TERM.

Physical Geography and Geological Principles.—Rain and Rivers. The Atmosphere and Winds. The Ocean, Inland Seas, and Lakes. Frost, Snow, and Glaciers. Denudation in its Destructive Aspect. The Formation of Stratified Deposits. The Consolidation and Alteration of the Rocks. Elevation and Subsidence. Mountain Ranges. Volcanoes and Earthquakes.

SECOND TERM.

The Study of Rocks and Applied Geology.—The Structure and Arrangement of Rock Masses (Petrology); the Minute Structure of Rocks (Lithology); the Lithological Units (Mineralogy). Mineral Veins. Metallic Ores. Coal. Building Stones. Soils. Water Supply.

THIRD TERM.

Palæontology and Stratigraphical Geology.—The Nature of Fossils and the Processes of Fossilization. The Value of Fossils to the Geologist. The Eozoic, Palæozoic, Mesozoic, and Cainozoic Records. The importance of a knowledge of Stratigraphical Geology to the Engineer, the Miner, and the Farmer.

The lectures will be illustrated by specimens and diagrams. A paper of questions to be worked out will be set from time to time. The local Geology will be studied in the field. Typical rocks and

fossils will be examined by each individual in the class.

Text-books.—*A Class Book of Geology*, A. Geikie; *The Study of Rocks*, F. Rutley (Text-books of Science); *Mineralogy*, F. Rutley (Murby's Science Series). References to larger treatises, and to works treating of special branches of the subject, will be given during the lectures.

Fee, £5 5s. for three Terms; £4 4s. for two consecutive Terms; £3 3s. for the first or second Term; £2 2s. for the third Term.

MINERALOGY AND LITHOLOGY.

Professor C. Lloyd Morgan.

Special arrangements can be made with regard to instruction in these subjects.

PALÆONTOLOGY.

Professor C. Lloyd Morgan.

Special arrangements can be made with regard to instruction in this subject.

GEOLOGICAL LABORATORY.

Professor C. Lloyd Morgan.

The Geological Laboratory is open daily from 10—4, except on Saturday, when it closes at one o'clock.

A course of practical instruction in the methods of geological research, and on the characters of the more important minerals and rocks, will be conducted, under the supervision of the Professor.

Opportunities will be given for field work.

FEES IN GUINEAS—	6 days a week.	4 days a week.	2 days a week.
For the Session	8	6	4
" two Terms	6	4½	3
" one Term	3	2	1½

BIOLOGY.

Professor C. LLOYD MORGAN.

In consequence of the new regulations for the Intermediate Examinations in Science of the University of London, by which Botany is raised to co-ordinate importance with *Zoology*, these two leading divisions of Biology will be treated separately by the Lecturers on Botany and *Zoology* respectively.

For particulars see pages 68 and 70.

ZOOLOGY.

GENERAL ZOOLOGY COURSE.

Professor C. LLOYD MORGAN.

Monday, Wednesday, and Friday, 2.30—3.30.

The object of this course, which will consist of about thirty lectures, delivered during the first Term, is to afford a general introduction to *Zoology*, and to supply such a basis of zoological knowledge as may enable those interested in, but without special knowledge of, the science which deals with animal life, to understand and follow with profit the yearly increasing general literature of the subject.

SYLLABUS.

Simple forms of Life. Spontaneous generation. Distinction between Animals and Plants. Division of labour. The structure and mechanism of the common Crayfish. Modifications of a single plan or type. The structure and mechanism of the common Frog. Muscular fibre and its function. Bone levers. Nerves and nerve-centres; their bony case. Special sense organs, and their modifications. Sight, hearing, smell, taste, touch, &c. The interpretation of the signs. Nourishment. Different modes of feeding. Respiration. Different modes of breath-

ing. The elimination of waste. The life and death of the organism. The vertebrate plan or type. Nature of the modifications. Manner of modification. Variation and inheritance. The ancestors of the Horse. Distribution in space and time.

The course will be illustrated by diagrams, preparations, and microscopic objects.

Fee, £3 3s.

ZOOLOGY.

SPECIAL ZOOLOGY COURSE.

Professor C. LLOYD MORGAN.

Tuesday and Thursday, 2.30—5.

The elements of Vertebrate Morphology and Physiology, as exemplified by the Rabbit, the Fowl, and the Frog.

The description of the external form and the nomenclature of the parts of these animals.

The leading resemblances and differences in the plans of structure of the three. The chief features in their osteology, with special reference to the skull and limbs. The visceral anatomy of each, including the general structure of the brain, the spinal cord, and the sense organs.

The histological character of the blood, epidermal and epithelial organs, connective tissues, cartilage, bone, muscle, and nerve in these animals.

The character and mode of formation of their ova and spermatozoa.

The chief stages of the development of the Frog, Fowl, and Rabbit. The nature of the placenta in the latter.

The structure and life history of *Astacus*, *Lumbricus*, *Helix*, *Distoma*, *Hydra*, *Vorticella*, and *Amœba*.

This course is intended to meet the requirements of those who have entered for the Preliminary Scientific (M.B.) or Intermediate Examination in Science at the University of London.

A sum of £1 1s. is charged to each student, to defray the expense of material used.

Text-books.—*Elementary Instruction in Practical Biology*, Huxley and Martin; *Zootomy*, T. J. Parker; *Atlas of Biology*, G. B. Howes; *Animal Biology*, C. Lloyd Morgan.

Fee, £5 5s. for three Terms; £4 4s. for two consecutive Terms; £3 3s. for the first or second Term singly; £2 2s. for the third Term.

COMPARATIVE ANATOMY.

Professor C. Lloyd Morgan.

This course is intended to meet the requirements of students preparing for the Fellowship Examination of the Royal College of Surgeons.

Special arrangements will be made with regard to the day and hour.

Fee, £4 4s.

BIOLOGICAL LABORATORY.

Professor C. Lloyd Morgan.

The Biological Laboratory is open daily from 10—4, except on Saturday, when it closes at 1 o'clock.

A course of practical instruction in the methods of biological research, and on the structure of the leading animal types, will be conducted under the supervision of the Professor.

A class will be formed to undertake the original investigation of some special subject, or the complete study of some small group of animals.

Arrangements are made for obtaining such specimens as may be required.

Students will find it convenient to provide themselves with a microscope of their own. Good working instruments can now be obtained at comparatively small cost; but it would be advisable for students to consult the Professor before purchasing, as the value of a microscope depends greatly upon the maker. A fee of 10/- a Term will be charged for the use of a College microscope. Each student is expected to be provided with a set of the necessary dissecting apparatus.

FEES IN GUINEAS—	6 days a week.	4 days a week.	2 days a week.
For the Session	8	6	4
" two Terms	6	4½	3
" one Term	3	2	1½

BOTANY.

Professor ADOLPH LEIPNER.

FIRST AND SECOND TERMS.

Tuesdays, 9—11; Saturdays, 9—10.

THIRD TERM.

Tuesday, Thursday, and Saturday, 9—11.

General Morphology, Anatomy, and Physiology of Plants.

The structure and life-history of the leading types of Cryptogams and Phanerogams.

This course covers the entire range of Botanical studies required for the Preliminary Scientific (M.B.) Examination and the Intermediate Examination in Science of the University of London.

Facilities will also be given to any student (Ele-

mentary or Advanced) for practical work in any special department of Botany.

The Botanical Garden, attached to the College, contains upwards of 1,000 specimens, illustrating the different orders; and, being at all times accessible to students, gives every opportunity for illustration and study.

Text-books.—*Text-book of Botany*, by Prantl and Vines; Sachs' *Text-book of Botany; Practical Botany*, Bower and Vines; *Elementary Instruction in Practical Biology* (Huxley and Martin). For field-work: Hooker's *Students' Flora of the British Islands*, or Babington's *Manual of English Botany*.

Fees, £5 5s. for three Terms; £4 4s. for two consecutive Terms; £3 3s. for the first or second Term singly; £2 2s. for the third Term.

POLITICAL ECONOMY.

Lecturer, E. C. K. Gonner, B.A.

Thursday and Friday, 4—5.

A course of twelve lectures will be delivered during the first Term, beginning 7th October.

The chief subjects treated will be The Growth and Distribution of Wealth, and The Importance and History of Capital.

Syllabus.

I.—The importance of the study of Political Economy. Its relation to history. Its position as a science. The Postulates.

II.—The problems and elements of Political Economy. Wealth and Value.

III.—The production of wealth. The law of diminishing return. Malthus and the law of population.

IV.—The history of the cultivation of the land. The division of its produce.

V.—The theory of rent. Ricardo and his critics.

VI.—Capital. Fallacies relating to capital. Its connection with the currency.

VII.—The importance of capital. Its accumulation. Its basis. Interest.

VIII.—The wages of labour. Real and nominal wages. The Wage Fund theory: its history and its error.

IX.—The mutual assistance of capital and labour. The connection between the rate of wages and the rate of interest. The nature of profit. The division of labour. Trades Unions.

X.—History of the relations between capital and labour. Co-operation and Socialism. Owen. St. Simon. English Co-operators.

XI.—Industrial progress. Growth of material comfort. Increase in real wages.

XII.—The present organisation of Industrialism. Its result on the nation. The influence of economic ideas on legislation. The present problems of Political Economy.

Fee for the course, £1 1s.

MODERN HISTORY.

Professor J. Rowley, M.A.

The Professor of Modern History will lecture twice a week during each of the three Terms of the Session. He will also hold two classes in each week. These classes are intended to be supplementary to

the lectures; it is sought through them to give students an opportunity of acquainting themselves with particular passages of history as these are described in the works of the best accessible writers on the subject. Examinations may be held from time to time during the Term in addition to those specified in the Calendar.

The subject for the first and second Terms will be—The History of Great Britain and Ireland from the death of Cromwell till the death of Anne (1658-1714). This includes the special period for the next Higher Local Examination of the University of Cambridge, and is also a considerable part of one (1603-1714) of the special periods prescribed in the Honour School of Modern History at Oxford (now open to women without the obligation of residence).

The lectures will be given on Tuesdays and Thursdays, from 11 to 12. The classes will be held on Mondays and Wednesdays, from 11 to 12.

Text-book.—Mr. Franck Bright's *History of England*.

Fee, £5 5s. for three Terms; £4 4s. for two consecutive Terms; £3 3s. for either the first or second Term; £2 2s. for the third Term.

SPECIAL ENGLISH COURSE FOR THE MATRICULATION EXAMINATION OF THE UNIVERSITY OF LONDON.

Professor J. Rowley, M.A.

Monday and Wednesday, 10—11.

A course of lectures in English History and Language, as required for the Matriculation Examination of the University of London, will be given during the Session, and will begin on 1st November.

Fee for the course, £4 4s.

ENGLISH LITERATURE.

Professor J. Rowley, M.A.

The Professor of English Literature will lecture twice a week during the first and second Terms, and once a week during the third Term of the Session. He will also hold two classes in each week during all three Terms. In these classes he will read with those of the students who desire to do so the more remarkable literary works produced during the period which forms the subject of his lectures. Examinations may be held occasionally in Term in addition to those specified in the Calendar.

The subject for the Session will be—The Poetry and Poets (except those living) of the Revolutionary Epoch till the death of Wordsworth (1789-1850).

The lectures will be given on Tuesdays and Thursdays, from 12 to 1, and during the third Term on Tuesdays only. The classes will be held on Mondays and Wednesdays, from 12 to 1.

Text-book.—Arnold's *Manual of English Literature*.

Fee, £5 5s. for three Terms; £4 4s. for two consecutive Terms; £3 3s. for either the first or second Term; £1 11s. 6d. for the third Term.

SPECIAL INSTRUCTION IN ENGLISH HISTORY AND ENGLISH LITERATURE.

Professor J. Rowley, M.A.

Tuesday and Thursday, 9.45—10.45.

Special instruction, beginning on the first Tuesday in the second Term, and continued during the Session, in the supplementary subjects of Group H, or in the subjects of Group A of the Cambridge Higher Local Examination, or in those of the English Honour Section of the Oxford Examination for Women, will be offered to students attending the ordinary classes

in Modern History or English Literature, and to such other students of the College as may satisfy the requirements of the Professor.

Fee for the course, £3 3s.

GREEK.

Professor R. FANSHAWE, M.A.

There will be an Elementary and an Advanced Class in Greek, of which the first will meet on Tuesdays, Thursdays, and Saturdays at 12, and the second on Mondays, Wednesdays, and Fridays at 4.

The authors read will be chosen with reference to the wants of students who present themselves. Provision will be made, as far as circumstances will allow, for candidates for the Examinations of the University of Oxford (now open to women), the Higher Local Examination of the University of Cambridge, and the Examinations of the University of London.

Fee, £5 5s. for three Terms; £4 4s. for two consecutive Terms; £3 3s. for the first or second Term singly; £2 2s. for the third Term.

LATIN.

Professor R. FANSHAWE, M.A.

There will be an Elementary and an Advanced Class in Latin, of which the first will meet on Tuesdays, Thursdays, and Saturdays at 11, and the second on Mondays, Wednesdays, and Fridays at 3.

The authors read will be chosen with reference to the wants of students who present themselves. Provision will be made, as far as circumstances will allow, for candidates for the Examinations of the University of Oxford (now open to women), the Higher Local Examination of the University of

Cambridge, and the Examinations of the University of London.

Fee, £5 5s. for three Terms; £4 4s. for two consecutive Terms; £3 3s. for the first or second Term singly; £2 2s. for the third Term.

ANCIENT HISTORY AND LITERATURE.

Professor R. FANSHAWE, M.A.

A course of lectures on Greek Sculpture, illustrated by photographs, will be given during the second and third Terms.

Further information, with a full Syllabus, will appear in the first Term.

HEBREW.

Lecturer, BERNHARD HEYMANN.

A class for beginners on Grammar and Construing will be held on Wednesdays and Fridays, from 2.30 to 3.30.

Instruction will be given to advanced students on Wednesdays and Fridays, from 3.30 to 4.30. Parts of the Book of Isaiah will be read, and occasional lectures will be given on Grammar and the earlier commentators.

Text-books may be obtained at the Registrar's office.

Fee, £5 5s. for three Terms; £4 4s. for two consecutive Terms; £3 3s. for the first or second Term singly; £2 2s. for the third Term.

FRENCH LANGUAGE AND LITERATURE.

Lecturer, EUGÉNE PELLISSIER, M.A., LL.B., B.Sc.

Instruction will be given in the French Language and Literature every Tuesday, Thursday and Friday. Advanced Class from 2.30 to 3.30; Elementary Class from 3.30 to 4.30.

In the Advanced Class lectures on French Literature from A.D. 1650 to 1700 will be delivered in French every Friday.

Text-books. — Advanced Class: Brachet's *French Grammar* (Hachette's English edition); *The graduated course of translation, Part II., Senior Course*, Cassal and Karcher; La Bruyère, *Les Caractères* (Hachette); Molière, *Les Femmes Savantes* (Macmillan).

Elementary Class: Brachet's *Elementary French Grammar* (Hachette's English edition); *The graduated course of translation, Part I., Junior Course*, Cassal and Karcher; Macmillan's *Second French Reader*.

Those who wish to enter for the Cambridge Higher Local Examination will be directed in their studies of the books recommended for it, especially Brachet, *Historical French Grammar*, and Geruzez, *Histoire de la Littérature Française*.

Fee, £5 5s. for three Terms; £4 4s. for two consecutive Terms; £3 3s. for the first or second Term singly; £2 2s. for the third Term.

GERMAN LANGUAGE AND LITERATURE.

Lecturer, ADOLPH LEIPNER.

Instruction will be given in the German Language and Literature every Monday, Wednesday and Friday. Elementary Class from 3 to 4; Advanced Class from 4 to 5.

In the Advanced Class occasional lectures on some Authors, or a period of German Literature, will be delivered in German.

Text-books.—Advanced Class: Eve's *German Grammar;* Lange's *German Composition; Selections from Modern Authors.*

Elementary Class: *German Studies*, by H. Plate, Part I. (Dresden, Louis Ehlermann); Whitney's *German Reader* (Macmillan and Co.).

Those who wish to enter for the Cambridge Higher Local Examination will be directed in their studies of the books recommended, especially: Gostwick and Harrison, *Outlines of German Literature;* Gelbe, *Deutsche Sprachlehre;* Vilmar, *Geschichte der deutschen Nationalliteratur;* Roquette, *Geschichte der deutschen Dichtung.*

Fee, £5 5s. for three Terms; £4 4s. for two consecutive Terms; £3 3s. for the first or second Term singly; £2 2s. for the third Term.

GENERAL TIME TABLE OF DAY CLASSES.

	Monday	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
CHEMISTRY—Junior Class .. .. (*a*)	—	—	10	—	—	10
" Senior Class .. .. (*a*)	9	9	—	9	9	—
" Advanced Class .. (*c*)	—	—	—	—	—	9
" Organic .. .. .. (*f*)	—	10	—	10	—	10
" Laboratory Instruction	10 to 5	10 to 5	10 to 5	10 to 5	10 to 5	10 to 1
" Photographic..	10	—	—	—	—	—
PRACTICAL PHOTOGAPHY	—	—	10 to 5	—	—	—
MATHEMATICS—Div. I.	12	—	12	—	12	—
" Div. II.	—	†11	—	†11	—	†11
" Div. III.	—	†9	—	†9	—	†9
" Special Course	11	—	11	—	—	11
" Tutorial	—	—	2.30-4.30	—	—	—
MECHANICS—1st and 2nd Terms ..	—	12 to 1	—	—	11 to 12	—
" 3rd Term	—	11 to 12	—	—	11 to 12	—
EXPERIMENTAL PHYSICS—						
Elementary	—	†12	—	12	—	—
Intermediate	—	—	11	—	11	—
Advanced	3	—	3	—	—	—
Technical	4	—	—	—	4	—
Laboratory Instruction	10 to 5	10 to 5	10 to 5	10 to 5	10 to 5	—
ENGINEERING—1st year—1st Term ..	—	12	—	12	—	—
" 2nd and 3rd Terms	—	10	—	10	—	—
" 2nd year—1st Term	—	10	—	10	—	—
" " 2nd Term ..	—	12	—	12	—	—
" " 3rd Term ..	12	—	—	—	12	—
" 3rd year	12	—	—	—	12	—
" Laboratory Instruction	Open	daily.				
" Workshop "	Open	daily.				
MACHINE DESIGN & DRAWING .. (*a*)	†2 to 4	—	—	—	†2 to 4	—
GEOMETRICAL DRAWING .. .. (*a*)	—	*2 to 4	—	*2 to 4	—	—
SURVEYING—Elementary .. .. (*e*)	—	—	2 to 5	—	2 to 4	—
" Advanced .. .. (*e*)	—	2 to 4	—	2 to 4	—	—
GEOLOGY—General..	4	—	4	—	4	—
" Applied .. .. .. (*l*)	—	—	—	—	—	—
" Laboratory Instruction ..	10 to 4	10 to 4	10 to 4	10 to 4	10 to 4	10 to 1
MINERALOGY AND LITHOLOGY .. (*l*)	—	—	—	—	—	—
PALÆONTOLOGY .. .. .. (*l*)	—	—	—	—	—	—
ZOOLOGY—General.. .. .. (*b*)	2.30	—	2.30	—	2.30	—
" Special	—	†2.30 to 5	—	†2.30 to 5	—	—
COMPARATIVE ANATOMY .. .. (*l*)	—	—	—	—	—	—
BIOLOGY—Laboratory Instruction ..	10 to 4	10 to 4	10 to 4	10 to 4	10 to 4	10 to 1
BOTANY—1st and 2nd Terms	—	9 to 11	—	—	—	9
" 3rd Term	—	9 to 11	—	9 to 11	..	9 to 11
POLITICAL ECONOMY .. .. .. (*b*)	—	—	—	4	4	—
MODERN HISTORY..	*11	11	*11	11	—	—
ENGLISH LITERATURE .. .. .. (*g*)	*12	12	*12	12	—	—
ENGLISH COURSE—Special .. .. (*h*)	10	—	10	—	—	—
ENGLISH HISTORY AND LITERATURE—Special .. .. .. (*k*)	—	9.45	—	9.45	—	—
GREEK—Elementary	—	*12	—	*12	—	*12
" Advanced	*4	—	*4	—	*4	—
LATIN—Elementary	—	*11	—	*11	—	*11
" Advanced	*3	—	*3	—	*3	—
ANCIENT HISTORY & LITERATURE (*m*)	—	—	—	—	—	—
HEBREW—Elementary	—	—	*2.30	—	*2.30	—
" Advanced	—	—	3.30	—	†3.30	—
FRENCH—Elementary	—	*3.30	—	*3.30	*3.30	—
" Advanced	—	*2.30	—	*2.30	2.30	—
GERMAN—Elementary	*3	—	*3	—	*3	—
" Advanced	*4	—	*4	—	*4	—

The instruction in the hours which are marked with * will take the form of class teaching.

The instruction in the hours which are marked with † will in some part take the form of class teaching.

(*a*) During the first and second Terms; (*b*) during the first Term only; (*c*) during the second and third Terms only; (*d*) during the second Term only; (*e*) during the third Term only; (*f*) on Tuesdays and Thursdays during the second Term; on Tuesdays, Thursdays and Saturdays during the third Term; (*g*) during the Session, but in the third Term only one lecture a week (on Tuesdays) and classes; (*h*) beginning 1st November, in preparation for the Matriculation Examination of the University of London; (*k*) beginning 18th January, in preparation for the Cambridge University Higher Local Examination, or the Oxford University Examination for Women; (*l*) by special arrangement; (*m*) during the second and third Terms; the hour will be fixed later.

DEPARTMENT OF ENGINEERING

AND THE

CONSTRUCTIVE PROFESSIONS.

Department of Engineering and the Constructive Professions.

The instruction in this department is designed to afford a thorough scientific education to students intending to become Engineers, or to enter any of the allied professions, and to supplement the ordinary professional training by systematic technical teaching.

The courses for Civil Engineers, Architects, and Surveyors are intended to meet the generally acknowledged want of a preparatory training for one or two years before the usual entrance as articled pupil into an office. Pupils are now usually articled for the comparatively short term of three years, and this scheme possesses the advantage of utilising the interval between leaving school and entering the office. These particular courses extend throughout the whole Session; but the Summer Term of each year is specially devoted to subjects which involve field work and enable excursions to be taken to neighbouring works of construction illustrating the lectures.

Arrangements are contemplated whereby students will be enabled to spend a short period of six months in Works during their College career.

It will be found that the detailed courses cover most of the ground of the Examinations which are now held by the Royal Institution of British Architects, and to a rather less degree those which qualify for admission as a Student, Associate, or Fellow of the Surveyors' Institution.

The schemes of study for Mechanical and Electrical Engineers, which extend over three years, are detailed hereafter.

Although the courses for the several branches of the profession are not obligatory, yet it is strongly recommended that they be taken as hereafter detailed, and a substantial reduction is made in the case of students who take the complete course. Any reasonable change or modification which a student may desire will be made upon application.

The Engineering Laboratory is provided with a powerful Testing Machine, capable of exerting upon the test-piece a force of 50 tons. By means of this machine, local Engineers are enabled to have important materials, iron, steel, &c., tested in Bristol, instead of sending them to London, as heretofore.

The Principal, or Professor Ryan, will be ready to give advice to students intending to join any of the courses.

Attention is specially directed to Regulation (6) of the General Regulations, p. 30, which provides that a report of the attendance of any student will be periodically sent to his parents or guardians, if they require it.

COURSE FOR STUDENTS INTENDING TO BECOME CIVIL ENGINEERS OR SURVEYORS.

The course of Civil Engineering has been arranged to extend over two years, according to the following time-table; but special arrangements will be made for students who may deem it advisable to remain for a third year:—

TIME TABLE.

First Year.						
First and Second Terms.						Third Term.
Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	
Mathematics, 12—1. Eng. Drawing, 2—4.	Engineering, 10—11. Physics, 12—1. Geom. Drawing, 2—4.	Chemistry, 10—11. Mathematics, 12—1. Mathematics, 2.30—4.30.	Engineering, 10—11. Physics, 12—1 Geom. Drawing, 2—4.	Mathematics, 12—1. Eng. Drawing, 2—4.	Chemistry, 10—11.	
Mathematics, 12—1. Workshop, 2—5.	Engineering, 10—11. Physics, 12—1.	Mathematics, 12—1. Surveying, 2—5.	Engineering, 10—11. Physics, 12—1.	Mathematics, 12—1. Surveying, 2—4.	Workshop, 10—1.	
Eng. Drawing, 2—4. Geology, 4—5.	Engineering, 10—11. Mathematics, 11—12. Geom. Drawing. 2—4.	Physics, 11—12. Geology, 4—5.	Engineering, 10—11. Mathematics, 11—12. Geom. Drawing, 2—4.	Physics, 11—12. Eng. Drawing, 2—4. Geology, 4—5.	Mathematics, 11—12.	
Engineering, 12—1. Geology, 4—5.	Mathematics, 11—12. Surveying, 2—4.	Physics, 11—12. Geology, 4—5.	Mathematics, 11—12. Surveying, 2—4.	Physics, 11—12. Engineering, 12—1. Geology, 4—5.	Mathematics, 11—12.	

Second Year.	
First & Second Terms.	Third Term.
Mathematics, 11—12.	Mathematics, 11—12.

In addition to the above course, second year students are entitled to six hours' workshop instruction a week during each Term.

1st Year.—In the first Term Engineering will be held Tuesdays and Thursdays, 12—1.

2nd Year.—In the second Term Engineering will be held Tuesdays and Thursdays, 12—1.

FEES.—The compounded fee for the above course is 28 guineas for the first year; 27 guineas for the second year.

Students while attending this course are eligible to be enrolled as Students of the Institution of Civil Engineers; and may then compete for the Miller Scholarship (value £40 per annum, tenable for three years) and the Miller prizes, which are awarded for original papers.

The following local Civil Engineers have expressed their approval of the course of instruction given in this Department. They also recommend it as a suitable preparation for persons intending to enter their offices as articled pupils, and in this capacity they will give preference to students of the Civil Engineering Department of the College:

Mr. Frederick Ashmead, Local Board of Health, Bristol.

Mr. H. Percy Boulnois, City Surveyor, Exeter.

Mr. Francis Fox, Great Western Railway, Bristol.

Mr. F. B. Girdlestone, Bristol Docks.

Mr. James Henderson, Truro.

Mr. Inglis, Great Western Docks, Plymouth.

Messrs. Thomas and William Morgans, Bristol.

Mr. Charles Richardson, Bristol. Severn Tunnel.

Mr. T. J. Scoones, Bristol.

Mr. Thomas Waring, Cardiff.

MINING ENGINEERING.

Students of the College who intend to become Mining Engineers follow the above Course and Time-table, but special provision is made for their instruction in the third Term of each year.

COURSE FOR STUDENTS INTENDING TO BECOME ARCHITECTS.

This course has been prepared for reasons already stated, but it is felt that the increasing use of iron in structures necessitates instruction specially bearing on this subject. At present the course is, therefore, similar to that in Civil Engineering, which it is thought will be the best fundamental training for those who can only spare one year from their technical work.

TIME TABLE.

First and Second Terms.					Third Term.
Monday.	Tuesday.	Wednesday.	Thursday.	Friday	Saturday.
Mathematics, 12—1. Building Constrn. 2—4	Technical Work, 10—11. Physics, 12—1. Geom. Drawing, 2—4.	Mathematics, 12—1. Workshop, 2—5.	Technical Work, 10—11. Physics, 12—1. Geom. Drawing, 2—4.	Mathematics, 12—1. Building Constrn. 2—4.	Workshop, 10—1.
Mathematics, 12—1. Workshop, 2—5.	Technical Work, 10—11. Physics, 12—1.	Mathematics, 12—1. Surveying, 2—5.	Technical Work, 10—11 Physics, 12—1.	Mathematics, 12—1. Surveying, 2—4.	Workshop, 10—1.

In the first Term the Technical Work will be held Tuesdays and Thursdays, 12—1.

FEES.—The compounded fee for the above course is 25 guineas.

This course covers most of the ground in which examinations have now to be passed by any individual before he can be admitted as Associate or Fellow of the Royal Institute of British Architects.

The following local Architects give their hearty support to the scheme, to which they attach considerable importance. They are, moreover, prepared to receive students who have passed satisfactorily through this course into their offices as pupils on more favourable terms than those without such preparatory training :

Mr. E. W. Barnes.
Mr. W. L. Bernard.
Mr. J. Bevan.
Mr. Henry Crisp.
Mr. E. Henry Edwards.
Messrs. Foster and Wood.
Mr. W. Bruce Gingell.
Mr. Charles F. Hansom.
Mr. H. C. M. Hirst.
Mr. W. Edward Jones.
Mr. Henry Masters.
Mr. J. C. Moncrieff.
Messrs. Philip Munro and Son.
Messrs. Pope and Paul.
Mr. T. J. Scoones.
Mr. Josiah Thomas.
Mr. Vincent W. Voisey.
Mr. Henry Williams.
Mr. F. W. Wills.

COURSE OF MECHANICAL ENGINEERING.

This course is carried on at the College during the six winter months, according to the following scheme :

TIME TABLE.

MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.	
Workshop, 10—12. Mathematics, 12—1. Eng. Drawing, 2—4.	Engineering, 10—11. Physics, 12—1. Geom. Drawing, 2—4.	Chemistry, 10—11. Mathematics, 12—1. Mathematics, 2.30—4.30.	Engineering, 10—11. Physics, 12—1. Geom. Drawing, 2—4.	Workshop, 10—12. Mathematics, 12—1. Eng. Drawing, 2—4.	Chemistry, 10—11. Workshop, 11—1.	First Year.
Workshop, 10—1. Eng. Drawing, 2—4.	Engineering, 10—11. Mathematics, 11—12. Geom. Drawing, 2—4.	Physics, 11—12. Workshop, 2—5.	Engineering, 10—11. Mathematics, 11—12. Geom. Drawing, 2—4.	Physics, 11—12. Eng. Drawing, 2—4.	Mathematics, 11—12. Workshop, 10—1.	Second Year.
Eng. Laboratory, 10—12. Engineering, 12—1. Eng. Drawing, 2—4. Tech. Physics, 4—5.	Mathematics, 9 - 10. Mechanics, 12—1. Geom. Drawing, 2—4.	Eng. Laboratory, 10—1. Workshop, 2—5.	Mathematics, 9—10. Eng. Laboratory, 10—1. Geom. Drawing, 2—4.	Mechanics, 11—12. Engineering, 12—1. Eng. Drawing, 2—4. Tech. Physics, 4—5.	Mathematics, 9—10. Workshop, 10—1.	Third Year.

1st Year.—In the first Term Engineering will be held Tuesdays and Thursdays, 12—1.
2nd Year.—In the second Term Engineering will be held Tuesdays and Thursdays, 12—1.

FEES.—The compounded fee for the above courses is for each year 20 guineas.

During the six summer months students of this course enter Engineering Works; and in accordance with this scheme the following Manufacturing Engineers in the neighbourhood have consented, at the request of the Council, to receive students of the College into their offices and workshops during the summer months:

The Bristol Wagon Works Co., Limited.
Messrs. Bush and de Soyres, Bristol.
Messrs. Cox and Co., Shipbuilders, &c., Falmouth.
Messrs. Ellacott and Son, Plymouth.
Messrs. Fielding and Platt, Atlas Iron Works, Gloucester.
The Isca Foundry Co., Newport, Mon.
Messrs. Newall and Co., Bristol.
Messrs. Spencer and Co., Melksham, Wilts.
Messrs. G. K. Stothert and Co., Bristol.
Messrs. Stothert and Pitt, Bath.
The Uskside Co., Newport, Mon.
Messrs. John Watts and Co., Bristol.
Messrs. Willoughby Brothers, Plymouth.

Engineering students can obtain a statement of the premium required on application to the Registrar and Secretary, and any further information from the respective firms.

Students who have passed through this course are by the new regulations eligible to compete for the Whitworth Scholarships, since these regulations, an abstract of which is given, p. 129, require that any candidate must have worked at least six consecutive months in each of three years in some Engineering Works.

COURSE OF ELECTRICAL ENGINEERING.

This course has been arranged for students studying for the profession of Electrical Engineering, and for those who wish to include in their professional training some knowledge of Electricity and its technical applications, especially with regard to Electric Lighting and Transmission of Power, Telephones and Telephonic Systems, Telegraphy, Electro-plating, &c. Many of the subjects of the general Engineering course are included, together with Electricity and Magnetism, and practical instruction in the Electrical Laboratory.

It should be borne in mind that an Electrical Engineer must, in addition to his knowledge of Electricity, have a thorough acquaintance with practical Engineering. A mere knowledge of Testing and Laboratory Work is not sufficient to enable a student to become an Electrical Engineer. All students who enter for this branch should therefore arrange with some firm, either of Electrical or of Mechanical Engineers, for a course of training in Engineering Works, after leaving the College.

Arrangements are contemplated, whereby students will be enabled to spend a short term of six months in Works during their College career.

Fees.—The compounded fees for these courses are: First year's course, £30; second year's course, £28; third year's course, £30.

TIME TABLE.

First Year.						
First and Second Terms.						Third Term.
Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	
Mathematics, 12—1. Chem. Laboratory, 2—5.	Engineering, 10—11. Physics, 12—1. Geom. Drawing, 2—4.	Chemistry, 10—11. Mathematics, 12—1. Mathematics, 2.30—4.30.	Engineering, 10—11. Physics, 12—1. Geom. Drawing, 2—4.	Mathematics, 12—1. Chem. Laboratory, 2—5.	Chemistry, 10—11. Chem. Laboratory, 11—1.	
Chem. Laboratory, 10—12. Mathematics, 12—1. Phys. Laboratory, 2—5.	Physics, 12—1. Workshop, 2—5.	Chem. Laboratory, 10—12. Mathematics, 12—1. Mathematics, 2.30—4.30.	Phys. Laboratory, 10—12. Physics, 12—1. Workshop, 2—5.	Chem. Laboratory, 10—12 Mathematics, 12—1. Phys. Laboratory, 2—5.	Workshop, 10—1.	

Second Year.			
First & Second Terms.			Third Term.
Workshop, 10—1. Eng. Drawing, 2—4.	Engineering 10—11. Mathematics, 11—12. Elec. Laboratory, 2—5.	Physics, 11—12. Eng. Drawing, 2—4.	Mathematics, 11—12.
Elec. Laboratory, 2—5.	Mathematics, 11—12. Workshop, 2—5.	Physics, 11—12. Elec. Laboratory, 2—5.	Mathematics, 11—12.

Third Year.			
First & Second Terms.			Third Term.
Elec. Laboratory, 10—12. Engineering, 12—1. Physics, 3—4. Tech. Physics, 4—5.	Mathematics, 9—10. Elec. Laboratory, 2—5.	Elec. Laboratory, 10—12. Engineering, 12—1. Elec. Laboratory, 2—5. Tech. Physics, 4—5.	Mathematics, 9—10. Workshop, 10—1.
Elec. Laboratory, 10—4. Tech. Physics, 4—5.	Mathematics, 9—10. Workshop, 2—5.	Elec. Laboratory. 10—4. Tech. Physics, 4—5.	Mathematics, 9—10.

1st Year.—In the first Term Engineering will be held Tuesdays and Thursdays, 12—1.
2nd Year.—In the second Term Engineering will be held Tuesdays and Thursdays, 12—1.

COURSE FOR THE PRELIMINARY SCIENTIFIC (M.B.) EXAMINATION OF THE UNIVERSITY OF LONDON.

The following course has been arranged for students preparing for this Examination:

TIME TABLE.

Subject.	Monday.	Tuesday	Wednesday	Thursday.	Friday.	Saturday.
Inorganic Chemistry (1st and 2nd Terms.)	9—10	9—10	....	9—10	9—10	....
Chemical Laboratory (3rd Term).	10—1	....	10—1	....	10—1	....
Intermediate Physics	....	.. .	10—11	....	10—11	....
Experimental "	....	....	11—1	....	11—1	....
Biology—						
Zoology	....	2.30—5	....	2.30—5	....	....
Botany— (1st and 2nd Terms)	....	9—11	....	....	....	9—10
(3rd Term)	....	9—11	....	9—11	....	....
Tutorial Class	(Hours by arrangement.)	....	....	....	....	....

The compounded fee for the above course is £25.

COURSE FOR THE MATRICULATION EXAMINATION OF THE UNIVERSITY OF LONDON.

The following course has been arranged for students preparing for this Examination:

TIME TABLE.

Subject.	Monday.	Tuesday	Wednesday	Thursday.	Friday.	Saturday.
Latin	....	11—12	....	11—12	....	11—12
Greek	....	12—1	....	12—1	....	12—1
German	3—4	....	3—4	....	3—4	....
French	....	3 30—4.30	....	3.30—4.30	3.30—4.30	....
English	10—11	....	10—11	....	....	....
Mathematics	12—1	....	12—1	....	12—1	....
Natural Philosophy..	....	12—1	....	12—1	....	....
Chemistry .. .. .. (1st and 2nd Terms.)	....	....	10—11	9—10	....	10—11

The compounded fee for the above course is £30.

SESSION 1886-87.

EVENING LECTURES.

GENERAL REGULATIONS.

(1.) Each student on admission must sign an undertaking to observe all the regulations affecting students made by the Council of the College for the time being.

(2.) The Registrar and Secretary will attend at his office, for the purpose of admitting students, from 6.45 to 8.15 p.m., from October 5th to October 18th, 1886, January 14th to January 27th, and from April 26th to May 2nd, 1887, except on Saturdays.

(3.) The tickets of admission issued by the Registrar and Secretary must be presented to the Professors and Lecturers for insertion of the student's name in the class lists. No student is entitled to attend the classes until he has obtained a ticket of admission.

(4.) A record will be kept of the attendance of students. A report of the attendance of any student will be periodically sent to his parents or guardians if they require it.

(5.) Disorderly conduct on the part of any student will be reported to the Principal, who will adopt such action thereon as he may deem necessary.

(6.) Every student is required to provide himself with a College Calendar.

The Council reserve to themselves the power of suspending any class, if there is not a sufficient number of entries.

FEES.

The fees are as a rule:—For courses in which two hours of instruction are given in the week, 20/- for three Terms; 15/- for two Terms; 10/- for one Term. Some exceptions to this rule will be found in the statements of fees which are appended to the accounts given further on of the subjects of the several courses.

An entrance fee of 1/- is charged for each course; but all entrance fees for one Session may be compounded for by a single payment of 3/-.

Evening Lectures.

SUBJECTS OF INSTRUCTION.

CHEMISTRY.

Lecturer, SYDNEY YOUNG, D.Sc.

FIRST COURSE.—Wednesday and Friday, 8—9.

This course consists of two lectures a week during the first and second Terms. The subject includes the general principles of Chemistry and Chemical Physics, and the Chemistry of Non-metallic Elements. Special attention will be paid throughout to those products which have a practical application in the Arts and Manufactures. The lectures will be illustrated with experiments and diagrams. Examinations will be held from time to time during the course.

SYLLABUS.

PRINCIPLES OF CHEMISTRY AND CHEMICAL PHYSICS.—Elements, mixtures and compounds. Separation of mixtures. Conservation of matter. Atomic theory. Laws of definite and multiple proportions. Combination of gases by volume. Laws of Boyle and Gay Lussac. Avogadro's hypothesis. Molecular and atomic weights. Analysis and synthesis of compounds. Quantivalence. Heat of combination. Methods of determining atomic weight.

THE NON-METALLIC ELEMENTS.— Hydrogen. Chlorine, Bromine, Iodine, and Fluorine. Compounds with Hydrogen. Oxygen, Sulphur, Selenium, and Tellurium. Combustion and Respiration. Compounds with Hydrogen. Water. Compounds of Chlorine group with Oxygen, Sulphur, &c. Acids, Bases, and Salts. Bleaching. Oxides and Oxy-acids of Sulphur, Selenium, and Tellurium. Sulphuric acid manufacture. Nitrogen, Phosphorus, Arsenic, Antimony. Compounds with Hydrogen. Ammonia. Compounds with Chlorine and Oxygen groups. Nitric acid. Lucifer Matches. Manures. Detection of Arsenic in cases of poisoning. Arsenical Dyes. Boron and its compounds. Carbon and Silicon. Compounds with other elements. Fire-damp. After-damp. Ventilation. Illumination. Coal-gas.

This course covers the subjects prescribed for Matriculation in the University of London.

Text-books.—Roscoe's *Elementary Lessons on Chemistry;* or Thorpe's *Inorganic Chemistry;* Thorpe's *Chemical Problems.*

Fee, 15/- for two Terms; 10/- for one Term.

SECOND COURSE.—Wednesday, 7—8.

This course consists of one lecture a week during the first and second Terms.

SYLLABUS.

REVIEW OF THEORIES DESCRIBED IN FIRST COURSE, AND OF NON-METALLIC ELEMENTS.— Abnormal Vapour Densities. Dissociation. Atomic and Molecular Heats. Crystallography. Isomorphism. The Periodic Law. The Metals. Classification. Equivalents. Quantivalence. General Properties of the Metals, Physical and Chemical. Special Properties and Methods of Preparation of

the more important Metals. Compounds of Metals. Oxides and Hydroxides. Salts. Chlorides. Bromides. Iodides. Fluorides. Cyanides. Hypochlorites. Chlorates. Perchlorates. Sulphides. Sulphates. Alums. Sulphites. Thiosulphates. Nitrates. Phosphates. Arsenates. Borates. Silicates. Glass and Earthenware. Mortar and Cements. Building Materials. Carbonates. Detection of the Metals. Spectrum Analysis.

Those compounds which are of Technical importance will be treated most fully.

Fee, 15/- for two Terms; 10/- for one Term.

THE CHEMISTRY OF EVERY-DAY LIFE.

A course of lectures will be delivered on Monday evenings, at 8 o'clock, during the first and second Terms, on the application of Chemistry in every-day life, illustrated by numerous experiments.

Syllabus.

Air.—Its Constituents. Historical Sketch of their Discovery. Its Physical Properties. Its Chemical Properties. Combustion and Respiration. Carbonic acid. Its function as regards Animals and Plants. Ammonia as a Plant Food. Ozone. Hydrogen-peroxide. Ventilation. The germ theory and antiseptics.

Water.—Its Composition. Historical Sketch. Its Physical and Chemical Properties. Water for Washing purposes. Hard and Soft Waters. How Water is Softened. Water for Drinking purposes: Noxious Impurities, how to detect and remove them.

Coal.—Nature of Heat. Sources of Heat. Composition of Coal and other Fuels. Combustion. Economical methods of Heating. Power of Fuels. Intensity of Fuels.

Coal-gas.—Manufacture. Composition. Best method of Using. Methods of Measuring Illuminating Power. Gas as a Heating agent.

Foods.—Nature and Composition. Constituents of Animal and of Vegetable Foods. Salts contained in Foods. Cooking, and the changes produced by it.

To each of these subjects four lectures will be devoted. The course is intended for those who do not possess any knowledge of Chemistry, and is designed to give information about things which come under everyone's daily notice.

Fee, 15/- for two Terms; 10/- for one Term.

CHEMICAL EXCURSIONS.

In order that students may have an opportunity of acquiring some knowledge of applied Chemistry, excursions to some of the mines and manufactories of the neighbourhood will occasionally be made. They will be conducted by the Professor or Lecturer. Past or present students of the College desirous of taking part in these excursions are invited to apply to the Professor of Chemistry.

PHOTOGRAPHIC CHEMISTRY.

Lecturer, A. Richardson, Ph.D.

Friday, 7—8.

A course of lectures on Photographic Chemistry, which is intended for those desirous of obtaining some knowledge of the subject, as well as for Photographers, will be delivered during the first and second Terms. The course will cover the subject as prescribed for the Technological Examination of the City and Guilds of London Institute.

Syllabus.

Discovery and Progress of Photography—Composition and Nature of Light—Pyroxyline: its Preparation and Properties—The Wet and Dry Plate Processes—Chemistry of Iron and Alkaline Development—Chemistry of Intensifying and Fixing the Photographic Image—Printing Processes—Silver Prints—Chemistry of Toning—Printing with Iron Chromium and Platinum Salts—The Lens—Exposure—Use of Stops, &c.

Fee, 15/- for two Terms; 10/- for one Term.

MATHEMATICS.

Lecturer, D. Codrington Selman.

Monday and Wednesday, 7—9.

Elementary Mathematics. — Arithmetic, Euclid, Algebra and Trigonometry.

Advanced Mathematics.—Conic Sections, Spherical Trigonometry, Differential and Integral Calculus.

Students in these classes may attend either on Mondays or Wednesdays.

Fee for either course, 20/- for three Terms; 15/- for two consecutive Terms; 10/- for one Term.

ELECTRICITY AND MAGNETISM.

Professor J. Ryan, M.A., D.Sc.

Lecturer, A. P. Chattock.

During the first and second Terms a course of twenty popular lectures will be delivered on Electricity and Magnetism, on Wednesday evenings, at 7 o'clock.

SYLLABUS.

Frictional Electricity.—Electrical Machines. Electroscopes. Induction. Leyden Jars and other Condensers. Electrometers.

Magnetism—Magnets, Natural and Artificial. Laws of Magnetic Force. The Compass and the Dipping Needle.

Current Electricity.—The Voltaic Cell. Batteries. Laws of Electromotive Force and of Resistance. Chemical Actions of the Current. Magnetic Actions of the Current. Electromagnets. Heating Effects of the Current. Induction Currents.

Telegraphy and Telephony.—Chief Types of Instruments. Duplex Telegraphy.

Electric Lighting.—Construction of Dynamo-electric Machines for Generating Electric Currents. Electric Lamps. The Voltaic Arc. Incandescence Lights.

Distribution and Storage of Electric Energy.—Systems of Distribution. Accumulators or Storage Batteries. Electric Motors or Engines. Electric Railways.

Text-book.—S. P. Thompson's *Electricity and Magnetism* (Macmillan and Co.)

Fee, 15/- for two Terms; 10/- for one Term.

ELECTRICAL LABORATORY WORK.

Professor J. RYAN, M.A., D.Sc.

Demonstrator, A. P. CHATTOCK.

Systematic instruction in Laboratory work will be given on Tuesday evenings, from 7 to 9 p.m., by the Professor and Demonstrator during the first and second Terms.

There will be two courses: an elementary one for junior students, and an advanced course for those already accustomed to electrical experimenting.

Elementary Laboratory Course.—Construction of Simple Apparatus. Electroscopes, Leyden Jars, Induction Apparatus, &c. Mode of Measuring Quantity and Density of Charge, Insulation and Inductive Capacity. Use of Electrical Machines. Management of Voltaic Batteries. Construction and Use of Galvanometers. Experiments with Batteries, Induction Coils, Telegraphic and Telephonic Apparatus.

Students attending this course will be taught how to make various pieces of apparatus for themselves, and they will be expected to furnish the materials at their own expense, which will not exceed a few shillings; such apparatus remaining as their own property.

Advanced Laboratory Course.—Measurement of Resistance, Electromotive Force, &c. Use of Resistance Coils, Wheatstone's Bridge, Galvanometers and Electro-dynamometer. Use of Condensers. Construction and Use of Dynamo-electrical Machines. Management of Electric Arc Lights and Incandescence Lamps. Measurement of Currents employed in Electric Lighting. Tests of Efficiency of Machinery and Lamps.

Fee, for two Terms, £1 11s. 6d.; for one Term, £1 1s.

STEAM AND THE STEAM ENGINE.

Professor J. RYAN, M.A., D.Sc.

During the first and second Terms a course of twenty popular lectures will be delivered on the above subject, on Wednesday evenings, at 8 o'clock.

Heat.—The principal phenomena of Heat. The Development of Heat. The Conduction and Radiation of Heat. Convection of Heat. The Solid, Liquid, and Gaseous States of Matter. Expansion and Contraction. The Measurement of Temperature and Quantity of Heat. Thermometers, Pyrometers, Calorimeters. Specific Heat or Capacity for Heat. Joule's Equivalent. The Elements of Thermodynamics. The Theory of Heat Engines. Hot-air and Gas Engines.

Steam.—The Formation of Vapour and Steam. The Boiling-points of Fresh and Salt Water. Saturated Steam. Superheated Steam. The Relations between the Pressure, Density, and Temperature of Steam. Condensation of Steam.

Furnaces and Boilers.—The different types. Fuel: solid, liquid, and gaseous. Boiler Explosions.

The Steam Engine.—Its History and Development. The Engines of Savary, Newcomen, and Watt. Watt's Inventions. Pumping Engines. The Compound Engine and the Triple Expansion Engines. Single-acting and Double-acting Engines. High-pressure and Low-pressure Engines. The Steam Jacket. The various types of Steam Engines. Stationary, Locomotive, and Marine Engines. Disc and Rotary Engines.

Calculations.—Detailed consideration of the principal types. Their objects and efficiency. Methods of measuring the duty and efficiency of Steam Engines. The Indicator. Nominal and Indicated Horse-power. Nett Horse-power, &c. Dynamometers. Other calculations.

Details.—Cylinders: simple, compound, and oscillating. Valves: safety-valves, double-beat valves, balanced valves, slide-valves, &c. Valve Motions.

Governors. Feed-pumps. Fly-wheels. The Giffard Injector. Gauges.

Text-book.—*The Steam Engine*, by Goodeve (Crosby, Lockwood, and Co.)

Fee, for two Terms, 15/-; 10/- for one Term.

WORKSHOP.

Demonstrator,

Monday and Wednesday, 7—9.

Instruction will be given in the following subjects:—The use of joiners' tools. Filing, fitting, and turning. In the use of the forge and smith's tools, and in the hardening and tempering of steel. Moulding and casting of gun-metal and other alloys on a small scale. Hand-turning. The use of the self-acting lathe for turning, boring, and screw-cutting. The preparation of standard gauges, of plane surfaces, and of cutting tools.

Students may attend either on Mondays or Wednesdays.

Fees, 21/- for two Terms; 15/- for one Term.

GEOMETRICAL DRAWING.

Lecturer, D. CODRINGTON SELMAN.

Thursday, 7—8.

A course of twenty lessons in Practical Plane and Solid Geometry will be given during the first and second Terms.

Plane Geometry.—The Construction of Scales. The Construction of Simple Figures. The Combination of Figures. The Transformation of Figures and Areas.

Solid Geometry.—Projections of Points and Lines.

Traces of Lines and Surfaces. Projection of Simple Solid Forms. Sections and Penetration of Simple Solids. Developments of Surfaces of Simple Solids, and Drawing of Patterns and Templates for Boilers, &c. Isometric Projection. Architectural Perspective.

Fee for the course, together with that on Machine Design and Drawing, 15/- for two Terms; 10/- for one Term.

MACHINE DESIGN AND DRAWING.

Lecturer, D. CODRINGTON SELMAN.

Thursday, 8—9.

A course of twenty lessons in Machine Drawing will be given during the first and second Terms.

The course of instruction will deal with the strength and form of Bolts and Nuts, Cotters, Shaftings, Couplings, Cranks, Eccentrics, Pistons, Pedestals, Plummer Blocks and Bearings, Toothed and Belt Gearing, Valves of various kinds, Pipes, Pipe Joints, Glands, Air and Force Pumps, and the preparation of Tracings and Working and Finished Drawings of Engines generally.

Students in the Drawing Courses will also be expected to undertake exercises to be worked out during the week. They will be required to provide themselves with the necessary instruments.

Fee for the course, together with that on Geometrical Drawing, 15/- for two Terms; 10/- for one Term.

GEOLOGY.

Professor C. LLOYD MORGAN.

Thursday, 7—9.

A course of about twenty lectures will be given during the first and second Terms.

PART I.—*Geological Principles.*—The Waste of the Land. The Building of the Rocks. The Alteration of the Rocks. The Upheaval of the Rocks. Mountain Ranges. Volcanoes. Earth Sculpture.

PART II.—*The Geological History of England.*—The formation of Strata and the Distribution of Sea and Land in Eozoic, Palæozoic, Mesozoic, and Cainozoic times. The Distinguishing Fossils.

PART III.—*The Development of Vertebrate Life.*—The Age of Fishes, the Age of Reptiles, the Age of Mammals, and the Age of Man.

During the first half-hour questions will be set, which will be of such a nature as to aid those who are preparing for examinations in Geology and Physical Geography. The first lecture of the course will be at 7.30.

Text-book.—*Class-book of Geology*, A. Geikie.

EXCURSIONS.

In the summer Term two or three excursions will be made to localities in the neighbourhood, with the object of studying practically the more important formations.

Fee, 15/- for two Terms; 10/- for one Term.

ZOOLOGY.

Professor C. LLOYD MORGAN.

Monday, 7—9.

A course of about twenty lectures in Elementary Animal Biology will be given during the first and second Terms.

PART I.—*Introduction.*—The General Structure of Animals. Protozoa and Metazoa. Analogous

and Homologous Organs. The Main Features of Classification. The Theory of Development. The Known Factors in the Process. The Residuum of Ignorance.

PART II.—*Comparative.*—External Features. The Skeleton and its Function. Organs of Digestion and their Function. Organs of Circulation and their Function. Organs of Respiration and their Function. The Nervous System and Organs of Sense. Development from the Egg.

Text-book.—*Comparative Anatomy and Physiology*, F. Jeffrey Bell.

During the first half-hour questions will be set, which will be of such a nature as to aid those who are preparing for examinations in Zoology or Biology. The first lecture of the course will be at 7.30.

Fee, 15/- for two Terms; 10/- for one Term.

BOTANY.

Professor, ADOLPH LEIPNER.

An elementary course of lectures on Structural and Physiological Botany, and on the classification, technical description and identification of the wild plants of the neighbourhood, will be given every Tuesday, from 7 to 9, during the second and third Terms.

The Botanical Garden attached to the College is at all times accessible to the students, and gives every opportunity for illustration and study.

Text-books.—*Text-book of Botany*, by Prantl and Vines; Hooker's *Students' Flora of the British Islands;* or Babington's *Manual of English Botany.*

Fee, 15/- for two Terms; 10/- for one Term.

MODERN HISTORY.

Professor J. ROWLEY, M.A.

Tuesday, 7—9.

There will be one lecture and one class every week during the first and second Terms. The subject for the Session will be, The History of the British Empire from the beginning of the administration of the elder, till the accession to office of the younger, Pitt (1757-1783).

There will be an examination at the end of the second Term.

Text-book.—Mr. Franck Bright's *History of England.*

Fee, 15/- for two Terms; 10/- for one Term.

ENGLISH LITERATURE.

Professor J. ROWLEY, M.A.

Wednesday, 7—9.

There will be one lecture and one class every week during the first and second Terms. The subject for the Session will be, English Verse and Prose from the outbreak of the Civil War till the death of Dryden (those of Milton excepted) (1642-1700).

The selected books of the first part of Group A of the Cambridge University Higher Local Examination will also be among those read at class.

There will be an examination at the end of the second Term.

Text-book.—Arnold's *Manual of English Literature.*

Fee, 15/- for two Terms; 10/- for one Term.

GREEK.

Professor R. FANSHAWE, M.A.

Monday, Wednesday, and Friday, 7—8.

The work of these classes will be arranged in three divisions: Elementary (Wednesday), Middle (Friday), and Advanced (Monday); in each of which instruction will be given in Translation, Grammar, and Composition. The authors to be read will be chosen with reference to the wants of the students who present themselves, provision being made, as far as circumstances allow, for candidates for the Examinations of the University of Oxford (now open to women), the Higher Local Examination of the University of Cambridge, and the Examinations of the University of London. Students are entitled to attend *any two* divisions for a single fee.

The books read in the Greek and Latin Middle Classes during the first Term will be those prescribed for the Matriculation Examination of the University of London for January, 1887.

Fee, 20/- for three Terms; 15/- for two Terms; 10/- for one Term.

LATIN.

Professor R. FANSHAWE, M.A.

Monday, Wednesday, and Friday, 8—9.

The same arrangements will be observed as in the Greek Classes. The Elementary Class will be held on Wednesdays, the Middle Class on Fridays, and the Advanced Class on Mondays.

Fee, 20/- for three Terms; 15/- for two Terms; 10/- for one Term.

HEBREW.

Lecturer, BERNHARD HEYMANN.

A Reading Class will be held on Monday evenings from eight till nine during the first and second Terms.

Text-books may be obtained at the Registrar's Office.

Fee, for the course, £2 2s.; for each Term, £1 1s.

FRENCH LANGUAGE.

Lecturer, EUGÈNE PELLISSIER, M.A., LL.B., B.Sc.

ELEMENTARY CLASS FOR MEN.—Monday, 7—9.

Accidence (Brachet's *Elementary French Grammar*). Chardenal's *Practical French Conversation*. Kastner's *Anecdotes Historiques et Littéraires*.

ADVANCED CLASS FOR MEN.—Thursday, 7—9.

Accidence and Syntax (Brachet's *Elementary French Grammar*). *The graduated course of translation, Part I., Junior Course*, Cassal and Karcher. Victor Hugo, *Les Misérables, Vol I.*, Williams and Norgate.

Lecturer, A. D'OURSY, B.A.

ELEMENTARY CLASS FOR WOMEN.—Friday, 7—9.

1.—Exercises in Chardenal's *Standard French Primer*. Practise in letter-writing.

2.—Translation in Chardenal's *French Reader*.

3.—Grammar. Accidence. Regular and most of the irregular verbs.

4.—Practise in French conversation.

ADVANCED CLASS FOR WOMEN.—Tuesday, 7—9.

1.—Translation from French into English of *French Classics, Vol. V.*, G. Masson. (Clarendon Press, Oxford.)

2.—*French Composition*, by Kastner (Hachette's edition). Accidence and Syntax. Practise in letter-writing.

3.—Lectures on French Literature on the period set for the Cambridge Higher Local Examination. Students preparing for this Examination require the following text-books :—

Dictionaire Etymologique (Brachet); *Histoire de la Litérature Française* (E. Geruzez); *Historical Grammar of the French Language* (Brachet).

Fee, 20/- for three Terms; 15/- for two Terms; 10/- for one Term.

GERMAN LANGUAGE.

Lecturer, ADOLPH LEIPNER.

ELEMENTARY CLASS.—Wednesday and Friday, 7—8.

Otto's *Conversational German Grammar.*

ADVANCED CLASS.—Wednesday and Friday, 8—9.

Eve's *German Grammar;* Lange's *German Composition* (Clarendon Press Series); *Selections from Modern Authors.*

Fee, 20/- for three Terms; 15/- for two Terms; 10/- for one Term.

GENERAL TIME TABLE OF EVENING CLASSES.

	Monday	Tuesday.	Wednesday.	Thursday.	Friday.
CHEMISTRY, Elementary .. .. (a)	—	—	8	—	8
" Advanced.. .. .. (a)	—	—	7	—	—
" of Every-day Life .. (a)	8	—	—	—	—
" Photographic .. .. (a)	—	—	—	—	8
MATHEMATICS .. .. (c)	*7 to 9	—	*7 to 9	—	—
ELECTRICITY AND MAGNETISM .. (a)	—	—	7	—	—
Electrical Laboratory .. .. (a)	—	7 to 9	—	—	—
STEAM .. .. (a)	—	—	8	—	—
Workshop Instruction .. (a) (c)	7 to 9	—	7 to 9	—	—
GEOMETRICAL AND MACHINE DRAWING .. .. (a)	—	—	—	*7 to 9	—
GEOLOGY .. .. (a)	—	—	—	†7 to 9	—
ZOOLOGY .. .. (a)	†7 to 9	—	—	—	—
BOTANY .. .. (b)	—	†7 to 9	—	—	—
MODERN HISTORY .. .. .. (a)	—	7 & *8	—	—	—
ENGLISH LITERATURE .. .. .. (a)	—	—	7 & *8	—	—
GREEK—					
Elementary	—	—	*7	—	—
Middle	—	—	—	—	*7
Advanced	*7	—	—	—	—
LATIN—					
Elementary	—	—	*8	—	—
Middle	—	—	—	—	*8
Advanced	*8	—	—	—	—
HEBREW .. .. (a)	*8	—	—	—	—
FRENCH—					
(Men) Elementary	*7 to 9	—	—	—	—
" Advanced	—	—	—	*7 to 9	—
(Women) Elementary	—	—	—	—	*7 to 9
" Advanced	—	*7 to 9	—	—	—
GERMAN—					
Elementary	—	—	*7	—	*7
Advanced	—	—	*8	—	*8

The instruction in the hours marked with * will take the form of class teaching.
The instruction in the hours marked with † will in some part take the form of class teaching.
(a) During the first and second Terms; (b) during the second and third Terms only: (c) Students in this class may attend either on Mondays or Wednesdays.

UNIVERSITY COLLEGE DISTRICT LECTURES.

Short courses of lectures, or single lectures, for the people, will be delivered in the city during the Session. Arrangements have already been made for the delivery in the city of a course of six evening lectures on Political Economy during the Winter Term, of which particulars will shortly be announced.

UNIVERSITY COLLEGE DISTRICT CLASSES.

In addition to the Evening Courses held at the College, classes in various subjects have been instituted in central or outlying parts of the city, and have been largely attended. These classes have been formed more especially for the benefit of those belonging to the wage-earning and industrial classes, and the admission fees have been fixed accordingly at low sums. They will be held during the Session at the British Schools, Redcross Street. Further information with regard to these classes may be obtained of the Registrar.

CHEMICAL PROFESSORSHIP.

The Professorship of Chemistry is at present endowed by an annual contribution from the Worshipful the Clothworkers' Company of London.

ANCHOR SOCIETY.

The Professorship of Engineering is occasionally assisted by contributions from the Anchor Society of Bristol.

CONTRIBUTION FROM BALLIOL COLLEGE, OXFORD.

A sum of £250 or upwards is annually received from Balliol College, Oxford, in support of the College.

ANNUAL SUBSCRIBERS TO SUSTENTATION FUND.

	£	s.	d.
Dixon, Joshua	25	0	0
Adams, R. and H.	15	15	0
Abbot, Pope, Brown, and Abbot...	10	10	0
Arrowsmith, James W.	10	10	0
Baker, William, and Sons	10	10	0
Baker, W. Mills	10	10	0
Baker, W. Proctor	10	10	0
Barnett and Gilmore	10	10	0
Bristol Wagon Works Company	10	10	0
Budd, F. N.	10	10	0
Budgett, James S.	10	10	0
Budgett, Samuel	10	10	0
Budgett, W. H.	10	10	0
Butler, William	10	10	0
Castle, Michael	10	10	0
Cordeux, Frederick	10	10	0
Cordeux, John, Sons and Were	10	10	0
Dean of Bristol, The	10	10	0
Edwards, G. W.	10	10	0
Evans, P. & S.	10	10	0
Fox, F. F.	10	10	0
Fry, Albert	10	10	0
Fry, Francis J.	10	10	0
Fry, Lewis, M.P.	10	10	0
George, W. E.	10	10	0
Gotch, Rev. Dr. F. W.	10	10	0
Harvey, John and Sons	10	10	0
Hunt, Hodson, and Bobbett	10	10	0
James and Pierce	10	10	0
Jones and Nash	10	10	0
Llewellins and James	10	10	0
Lysaght, John	10	10	0
Mayor of Bristol, The (Charles Wathen)	10	10	0
Marshall, Professor Alfred	10	10	0
Macliver, P. S.	10	10	0
Morley, Samuel	10	10	0
Netham Chemical Company	10	10	0
Pass, Alfred C.	10	10	0
Phillips, Augustus	10	10	0

	£	s.	d.
Prankerd, P. D.	10	10	0
Proctor, C. W. Cope	10	10	0
Shipley, Alfred	10	10	0
Smith, William	10	10	0
Sommerville, W.	10	10	0
Thomas, Charles	10	10	0
Thomas, Herbert	10	10	0
Tothill, William	10	10	0
Tuckett, F. F.	10	10	0
Weston, Joseph D.	10	10	0
Wills, Edward P.	10	10	0
Wills, Frederick	10	10	0
Wills, H. O.	10	10	0
Wills, W. H.	10	10	0
Wilson, Rev. J. M.	10	10	0
Worsley, P. J.	10	10	0
Fry, J. S.	10	10	0
Garnett, Mrs.	10	0	0
Hill, Charles, and Sons	10	0	0
Jolly and Sons	10	0	0
Wethered, Henry	10	0	0
Bennett, C. T.	5	5	0
Chandler and Mawer	5	5	0
Cross, F. Richardson	5	5	0
Cruddas, C. J.	5	5	0
Dobson, N. C.	5	5	0
Davies and Co.	5	5	0
Fox, Dr. E. Long	5	5	0
Giles, Schacht, and Co.	5	5	0
Godwin, Warren, and Co.	5	5	0
Gotch, Miss	5	5	0
Hall, John, and Sons	5	5	0
Jose, T. P., and Sons	5	5	0
Lawson, Phillips, and Billings	5	5	0
Leonard, Miss	5	5	0
Lindrea and Co.	5	5	0
Meade-King and Bigg	5	5	0
Tinn, Joseph	5	5	0
Townsend, Charles	5	5	0
Wansey, A. H.	5	5	0
Aiken, J. Chetwood	5	0	0
Colfox, William	5	0	0
Fowler, Mrs. William	5	0	0
Gardiner, Alfred, and Sons	5	0	0
Hallett, Mrs. Ashworth	5	0	0
Northam, T. G.	5	0	0
Stevens, Mrs. Yates	5	0	0
Swayne, S. H.	5	0	0
Taylor and Low Brothers	5	0	0
Wethered, Joseph	5	0	0
Wills, Samuel, and Co.	5	0	0
Budgett, James, and Branth	3	3	0

	£	s.	d.
Grace, J. and H.	3	3	0
Ireland, J. C. Clayfield	3	3	0
Smith, Mrs. William	3	3	0
Spencer, Dr. W. H.	3	3	0
Stephens, Gundry	3	3	0
Sturge, William	3	3	0
Addiscot, Henry	2	2	0
Alcock, Captain	2	2	0
Ball, Miss	2	2	0
Bright, Miss	2	2	0
Charleton, Mrs. R.	2	2	0
Charleton, Robert A.	2	2	0
Clark and Harrison	2	2	0
Clarke and Sons	2	2	0
Corner, George, and Co.	2	2	0
Cowlin, W. B., and Son	2	2	0
Danger and Cartwright	2	2	0
Evans, Mrs. J. L.	2	2	0
Fox, Mrs. Joseph H.	2	2	0
Fry, Miss	2	2	0
Fry, Miss E. W.	2	2	0
Harsant, W. H.	2	2	0
Headford, John and Co.	2	2	0
Hooper, Miss	2	2	0
Laverton and Co.	2	2	0
Lewis and Sons	2	2	0
M. S. F., per Miss Elliot	2	2	0
Parson, T. C.	2	2	0
Perry, John F.	2	2	0
Pottow, John	2	2	0
Prankerd, Mrs.	2	2	0
Price, J. and C., and Brothers	2	2	0
Reynolds, Lieut.-Colonel	2	2	0
Robinson, Edward	2	2	0
Robinson, Mrs. A.	2	2	0
Savile, Mrs.	2	2	0
Sibly and Dickinson	2	2	0
Steadman, Henry J.	2	2	0
Swann, E. J.	2	2	0
Tanner, Samuel	2	2	0
Tothill, Miss	2	2	0
Townsend, Frank	2	2	0
Venning, Miss	2	2	0
Wayte, Rev. S. W., B.D.	2	2	0
Whitwill, Mr. and Mrs. Mark	2	2	0
Wills, Mrs. Frederick	2	2	0
Wills, Charles, and Co.	2	2	0
Cave, Mrs.	2	0	0
Fry, Lewis G.	2	0	0
Austin, E., and Son	1	1	0
Baker, Mrs. Proctor	1	1	0
Baker, Hiatt C.	1	1	0

	£	s.	d.
Baker, J., and Son	1	1	0
Barnett, Mrs. Gilmore	1	1	0
Baynes, Mrs. J. A.	1	1	0
Brittan, Alfred (donation)...	1	1	0
Brittan, Mrs. A.	1	1	0
Budgett, Miss C. E.	1	1	0
Budgett, S. Arnold	1	1	0
Chapple, Allen, and Co.	1	1	0
Chappell, Samuel	1	1	0
Chilton, G. H. D.	1	1	0
Chilton, Mrs.	1	1	0
Daniel, Henry	1	1	0
Daniell, J. L.	1	1	0
Dunbar, Dr. Eliza W.	1	1	0
Dymond, Mrs.	1	1	0
Edwards, Arthur M.	1	1	0
Elliot, Miss	1	1	0
Fawn and Son, James	1	1	0
Fripp, Steuart	1	1	0
Fry, Albert M.	1	1	0
Fry, John D.	1	1	0
George, Mrs. Edward	1	1	0
George, Mrs. W. E.	1	1	0
Gilmore, Mrs.	1	1	0
Gotch, Francis	1	1	0
Greenslade, Miss	1	1	0
Hall, Mrs. J. W.	1	1	0
Harvey, Mrs.	1	1	0
Hawkes, W. H.	1	1	0
Jeffery and Hucker	1	1	0
Leonard, W. A.	1	1	0
Lloyd, Mrs. W. Reynolds...	1	1	0
Lockley, J. H.	1	1	0
Low, Mrs. Hoskins	1	1	0
May, G. B.	1	1	0
Miles, Mrs.	1	1	0
Morgan, Frederick	1	1	0
Napier, Miss	1	1	0
Nicholson, Dr. T. D.	1	1	0
O'Brien, Mrs.	1	1	0
Pope, Mrs. J. N. C.	1	1	0
Price and Parker	1	1	0
Robinson, Alfred R.	1	1	0
Stock, Alfred E.	1	1	0
Stoddart, F. Wallis	1	1	0
Sturge, Miss Catherine	1	1	0
Sturge, Miss Matilda	1	1	0
Sykes, Miss M. A.	1	1	0
Sykes, Mrs.	1	1	0
Twiggs, H. W.	1	1	0
Ward, Miss	1	1	0
Williams, Miss Katharine I.	1	1	0

	£	s.	d.
Wills, Mrs. George A.	1	1	0
Winkworth, Miss A. E.	1	1	0
Worrall, Miss	1	1	0
Yeates, Miss	1	1	0
Young and Neilson	1	1	0
Ivens, C. F.	1	0	0
Rawson, Miss Isabel	1	0	0
Spiller, Miss Kate	1	0	0
Cocks, Miss E. A.	0	10	6
Garnett, Miss	0	10	6
Grundy, H.	0	10	6
Hurn, J.	0	10	6
Leon, J. A.	0	10	6
Stroud, Henry	0	10	6
Stroud, Professor William...	0	10	6
Townsend, H. H.	0	10	6
Wansey, Mrs.	0	10	6
Abbot, Mrs. H. N.	0	10	0
Baker, Miss	0	10	0
Sturge, Misses	0	10	0
Wills, Miss	0	10	0
Wills, Miss A.	0	10	0
Wedmore, Miss	0	10	0
Wedmore, Miss C.	0	10	0
Wolff, Miss	0	10	0

GIFTS.

The following Gifts have been received during the Session 1885-86:

LIBRARY.

Donations of Books from

Begg, Alexander, Esq., *Ganadian Gazette.*
Bureau of Education, Washington, U.S.A.
Cambridge Philosophical Society.
Canterbury College, New Zealand.
Civil Engineers, The Institution of.
College of Preceptors.
Dalhousie College and University, Halifax, Novia Scotia.
Durham College of Science, Newcastle-on-Tyne.
Firth College, Sheffield.
Fryer, Dr. Alfred C.
Griffen, Messrs. Charles, and Co.
Longmans, Messrs., and Co.
Macmillan, Messrs., and Co.
Mason Science College, Birmingham.
Mechanical Engineers, The Institution of.
Playfair, The Right Honourable Sir Lyon, K.C.B., M.P.
Queen's College, Belfast.
Rivingtons, Messrs.
Royal University of Ireland.
St. Thomas' Hospital Medical School.
Society of Engineers.
Swansea Public Library.
Textile Recorder, The Editor.
Textile World, The Editor.
Thompson, Professor S. P.
Trinity College, London.
University of Aberdeen.
University of Durham.
University of Glasgow.
University of London.
University of Oxford, The Delegates.
University of St. Andrew's.
University College, Dundee.
University College, Liverpool.
University College, London.
University College, Nottingham.
University College of Wales.
University College of South Wales.
University College of North Wales.
Wilson, Rev. J. M.
Worshipful Company of Clothworkers, London.
Yorkshire College, Leeds.

CHEMICAL DEPARTMENT.

Specimens of Iron, Steel and Ores from the Ebbw Vale Iron, Steel and Coal Company Limited, per Messrs. Ferris & Co., Bristol.

ENGINEERING DEPARTMENT.

E. Walker, Esq., Avonside Engine Works.

Various donations and subscriptions have also been received towards the maintenance of the Botanical Garden.

FORM OF BEQUEST.

I give to University College, Bristol, the sum of £ to be paid out of such part of my personal estate as I can lawfully charge with the payment of legacies to charitable uses, and to be paid, free of legacy duty, within from my death, to the Treasurer, for the time being, of the said College, whose receipt shall be a sufficient discharge for the same.

UNIVERSITY OF OXFORD.

Attention is directed to a Statute of the University of Oxford, recently passed, by which women who have passed the First Examination for Women, or any of the Examinations specified in the Regulations of the Oxford University Examinations for Women as equivalent thereto, may, without the obligation of residence, offer themselves for the Honour Examinations of the University in Greek and Latin, in Mathematics, in Modern History, or in Natural Science. Candidates who so offer themselves will be examined by the University Moderators or Public Examiners (as the case may be) in the same Papers and at the same time, and will be classed according to the same standard as members of the University, and may receive Certificates to that effect. Full particulars as to these Examinations will be found in *The Examination Statutes and Regulations* (Clarendon Press), copies of which (price 1/- each) can be obtained from the Secretary to the Delegacy of Local Examinations, Clarendon Building, Oxford, from whom information as to these and the other Examinations for Women of the University of Oxford can also be obtained.

UNIVERSITY OF LONDON.

Abstract of the Regulations for Degrees in Arts and Science.

Matriculation.

Second Monday in January and third Monday in June. Candidates must have completed their sixteenth year. Fee, £2.

Subjects.—1. Latin; 2. Any two of the following languages: (*a*) Greek, (*b*) French, (*c*) German, (*d*) either Sanscrit or Arabic; 3. The English Language, English History, and Modern Geography; 4. Mathematics; 5. Natural Philosophy; 6. Chemistry.

The June Matriculation Examination is held in University College, Bristol. Local Fee, £1. For particulars with regard to the course arranged for students preparing for this Examination, see p. 93.

Intermediate Examination in Arts.

Third Monday in July. Fee, £5.

Subjects (Pass).—Classics: the Latin Language; History of Rome to the Death of Augustus; Greek. The English Language, Literature, and History. The French or the German Language. Mathematics.

Bachelor of Arts Examination.

Fourth Monday in October. Fee, £5.

Subjects (Pass).—The following Branches of Knowledge; Branches I., II. and III. being compul-

sory, but an option being allowed between Branch IV. and Branch V.: I. Latin, with Roman History; II. Greek, with Grecian History; III. *One* of the following Languages: English, French, German, Italian, Arabic, Sanscrit; IV. Either *Pure* or *Mixed* Mathematics; V. Mental and Moral Science.

Master of Arts Examination.

First Monday in June. Fee, £10.

Subjects.—One or more of the following Branches of Knowledge: I. Classics; II. Mathematics and Natural Philosophy; III. Mental and Moral Science, Political Philosophy, History of Philosophy, Political Economy; IV. Any two of the following subjects: 1. English Language and Literature, including Anglo-Saxon Language and Literature; 2. French Language and Literature; 3. Germán Language and Literature; 4. Italian Language and Literature; 5. Hebrew Language and Literature, with Syriac Language and Literature; 6. Sanscrit Language and Literature; 7. Arabic Language and Literature.

Doctor of Literature Examination.

First Tuesday in December. Fee, £10.

Candidates for the Degree of Doctor of Literature shall be required to have passed the M.A. Examination in Branch I., and also in either Branch III. or Branch IV.

Every candidate for this Examination shall be required to transmit, not later than October 1st, an original printed Essay or Thesis upon some special subject within the purview of Branch I., or III.,

or IV., of the M.A. Examination, embodying the result of independent research, or a critical review of what has been written on the subject.

Intermediate Examination in Science.

Third Monday in July. Fee, £5.

Subjects (Pass).—Inorganic Chemistry; Experimental Physics; Pure Mathematics; Mixed Mathematics; General Biology.

Bachelor of Science Examination.

Third Monday in October. Fee, £5.

Subjects (Pass).—*Any three* of the nine following subjects: I. Pure Mathematics; II. Mixed Mathematics; III. Experimental Physics; IV. Chemistry; V. Botany; VI. Zoology; VII. Animal Physiology; VIII. Physical Geography and Geology; IX. Mental and Moral Science.

Doctor of Science Examination.

Within the first twenty-one days in June. Fee, £10.

Every candidate for the Degree of D.Sc. shall forward a statement in writing of the special subject within the purview of the Faculty of Science, as set out in the Programme of the B.Sc. Examination, upon a knowledge of which he rests his qualification for the Doctorate; and with this statement he shall transmit an original printed Dissertation or Thesis, treating scientifically some special department of the subject so named, embodying the result of independent research, or showing evidence of his own

work, whether based on the discovery of new facts observed by himself, or of new relations of facts observed by others, or generally, tending to the advancement of Science.

Preliminary Scientific (M.B.) Examination.

Third Monday in July and third Monday in January. Fee, £5.

Subjects (Pass).—Inorganic Chemistry; Experimental Physics; General Biology.

For particulars with regard to the course arranged for students preparing for this Examination, see p. 92.

For further information with regard to these Examinations, the Examinations for Honours, and the various Prizes and Exhibitions offered for competition, see the Calendar of the University of London.

WHITWORTH SCHOLARSHIPS.

ABSTRACT FROM THE REGULATIONS.

The Whitworth Scholarships are of the value of £200, £150, and £100, and they are open for competition to any of Her Majesty's subjects under twenty-six years of age on the 1st May. Candidates must have been engaged in handicraft for at least three years, and have been at work at the vice and lathe, or the forge, or the bench, for at least six consecutive months in each of those years. They must have spent at least twelve months at the vice and lathe.

The competition will be in the following subjects:

Practical geometry.	Sound, light, and heat.
Machine drawing.	Magnetism and electricity.
Building construction.	Inorganic chemistry.
Naval architecture.	Metallurgy.
Mathematics.	Steam.
Theoretical mechanics.	Freehand drawing.
Applied mechanics.	

The maximum number of marks obtainable in most of the subjects will be, in the

Elementary stage - -	100
Advanced stage - -	200
Honours - - - -	400

No candidate can obtain a Scholarship who has not passed in the second stage, or "honours," of practical geometry; and the second or third stage, or the "honours" of those stages, of mathematics; and obtained a first class in the first stage, or passed in the second stage or "honours," of theoretical mechanics; and obtained a "good" in freehand drawing.

No candidate can obtain a Scholarship who has not attained sufficient handicraft power. And if thought necessary by the Department this may be tested by requiring him to make two Whitworth screw bolts, 1 in. in diameter, and 4 to 6 in. long, with hexagonal heads and nuts, alike within ·001 in.

Sir Joseph Whitworth will allow the scholars to attend his works at Manchester free of cost.

Candidates must apply to the Science and Art Department *before the 15th April*. Write for Science Forms, Nos. 90 and 330.

Further particulars may be obtained from the Whitworth Prospectus, price 3d., for which apply to the Secretary, Science and Art Department, South Kensington, London, S.W.

Students of University College, Bristol, intending to compete for Whitworth Scholarships, should send their forms to the Registrar, not later than Saturday, 9th April.

THE INSTITUTE OF CHEMISTRY.

ABSTRACT OF THE REGULATIONS FOR ADMISSION TO THE ASSOCIATESHIP.

Every candidate for the Associateship will be required to produce evidence of the following qualifications :—

(1.) That he is not less than twenty-one years of age.

(2.) That he has passed satisfactorily through a course of three years' study in any one or more of the Universities or chartered or incorporated Colleges or Schools previously approved by the Council, in the subjects of Theoretical and Analytical Chemistry, Physics and Elementary Mathematics.

(3.) That he has passed such Examinations in these subjects at such Universities, Colleges and Schools as the Council may from time to time direct.

When, however, a candidate for the Associateship cannot adduce evidence of having passed an examination in Theoretical and General Chemistry,

Physics, and Mathematics, satisfactory to the Council, he may be required to pass an examination; such examination to be by printed or written questions, to which the candidate shall return written answers, without access to books, MSS. or memoranda.

Exceptions.

If a candidate has passed any of the following examinations, it will be considered as sufficient evidence of training in General and Theoretical Chemistry, Physics, and Elementary Mathematics, and he shall not be required to pass any further examination in these subjects:—

(1.) The final Honours Examination for the degree of B.A. at the University of Oxford in the subject of Chemistry, in the School of Natural Science.

(2.) The final or degree Examination for B.Sc. in the Universities of Edinburgh, Durham or London, or the Victoria University, in the subjects of Chemistry and Physics.

(3.) The Senior Moderatorship in Experimental Science in the University of Dublin.

(4.) The Associateship of the Royal School of Mines, if taken before 1884.

(5.) The Associateship of the Normal School of Science in the division of Chemistry.

(6.) The Associateship of the Royal College of Science, Dublin, in the Faculty of Manufactures.

Practical Examination.

Every candidate for the Associateship will be required to pass a Practical Examination in Analytical Chemistry as follows:—

Qualitative Analysis	-	Two days.
Quantitative Analysis	-	Two days.

With a brief *vivâ voce* Examination on the morning of the fifth day, when considered needful by the Examiner.

The Fee for this Examination is Two Guineas. In the event of the candidate failing to pass, the Fee will not be returned to him, but he will be admitted to one subsequent examination on payment of One Guinea.

University College, Bristol, has been approved by the Council of the Institute as a College at which all the subjects required for the admission of Associates to the Institute are taught, and as a centre for the Practical Examination.

Copies of the Regulations of the Oxford and Cambridge Local Examinations, the Examinations of the University of London, the Examinations of the College of Preceptors, and the L.L.A. Examination for Women of the University of St. Andrew's, may be obtained on application to the Registrar. The Regulations for the Examinations of the Science and Art Department and for Whitworth Scholarships are kept in the office for reference.

SESSION 1886-87.

APPENDIX.

LIST OF SCHOLARS.

SESSION 1885-6.

Chemical Scholarship—

Norman Leonard.

John Stewart Scholarship—

P. Egerton Shaw.
Edith Williams.

Gilchrist Scholarship—

John H. Parsons.

EXAMINATIONS OF DAY CLASSES.

CLASS I. CLASS II.

INORGANIC CHEMISTRY.

JUNIOR.

First Term:—

Walter H. Ligertwood.

Alfred J. Ward,
George M. Rice.

Second Term:—

Henry W. Dix.

Alfred J. Ward,
Walter H. Ligertwood.

SENIOR.

First Term:—

John H. Parsons,
Arthur J. Heath.

Robert M. Prideaux,
Charles Hamper.

Second Term:—

William H. Sturge,
Robert M. Prideaux,
John H. Parsons,
A. Dorothea Pease.

ADVANCED.

Second Term:—

P. Egerton Shaw.

Medwin C. Clutterbuck.

MATHEMATICS.

First Term—Division I.:—

James H. Shepherd,
Alfred J. Ward,
Robert M. Leonard,
Alfred G. Barnes,
George M. Rice,
William Pulford,
Ernest E. Smith,
Edward D. Lace.

Henry W. Dix,
Archer Turner,
Walter H. Ligertwood,
E. Ashford Smith,
W. Frederick Fisher,
Edward S. Sinnott,
J. Henry Jones,
Frank Smythe,
Henry G. C. Dring.

Class I.	Class II.
Division II.:—	
John H. Parsons, George D. Harding, Charles W. Phipps.	Ernest W. Burt, George H. Pitt, Llewelyn N. Tyack.
Second Term—Division I.:—	
James H. Shepherd, Alfred J. Ward, William Pulford, Juan C. Atkinson, E. Ashford Smith, Robert M. Leonard.	Ernest E. Smith, George M. Rice, Edward D. Lace, Walter H. Ligertwood, Henry W. Dix.
Division II.:—	
John H. Parsons, George D. Harding.	Ernest W. Burt, Charles W. Phipps, William E. Tanner.

EXPERIMENTAL PHYSICS.

Elementary.

First Term:—

Arthur W. Peake, Robert M. Leonard.	Walter H. Ligertwood, Frank T. Smythe, Robert M. Prideaux.

Second Term:—

Alfred J. Ward, Arthur W. Peake, Mary F. Cornford, Walter H. Ligertwood, Henry W. Dix, Robert M. Prideaux.	James H. Shepherd, Edward D. Lace, Archer Turner, Robert M. Leonard, Edward S. Sinnott.

Intermediate.

First Term:—

A. Dorothea Pease, Norman Leonard, John H. Parsons, Llewelyn N. Tyack, Charles W. Phipps, George D. Harding.	Alexander N. Farewell

Second Term:—

A. Dorothea Pease, John H. Parsons, William H. Sturge, Norman Leonard, Charles W. Phipps.	George D. Harding, William P. Southby

CLASS I. CLASS II.

ENGINEERING.

FIRST YEAR COURSE.

First Term:—

Alfred J. Ward,
Henry W. Dix,
James H. Shepherd,
Archer Turner.

Edward S. Sinnott,
John P. Littleton,
W. Frederick Fisher,

Second Term:—

Alfred J. Ward,
James H. Shepherd,
Henry W. Dix.

Archer Turner,
Edward D. Lace,
Edward S. Sinnott,
John P. Littleton,
W. Frederick Fisher,
E. H. Chetwood Aiken.

SECOND YEAR COURSE.

First Term:—

George D. Harding,
Charles W. Phipps,
Llewelyn N. Tyack.

Alexander N. Farewell.

Second Term:—

George D. Harding,
Charles W. Phipps,
Sidney H. Gillam.

Alexander N. Farewell.

THIRD YEAR COURSE.

First Term:—

Arthur W. Carpenter,
Hugh T. Sadler,
George H. Pitt,
William S. Halsey.

Second Term:—

Arthur W. Carpenter,
George H. Pitt.

ENGINEERING DESIGN AND DRAWING.

FIRST YEAR COURSE.

First Term:—

Honorio Fonseca,
Francisco Fonseca,
James H. Shepherd,
Edward S. Sinnott.

Alfred J. Ward,
Llewelyn N. Tyack,
W. Frederick Fisher,
Henry W. Dix,
John P. Littleton,
Ernest A. Coleridge.

Class I.	Class II.
Second Term:—	
Francisco Fonseca,	Sidney H. Gillam,
Honorio Fonseca,	Henry W. Dix,
E. H. Chetwood Aiken,	John P. Littleton,
James H. Shepherd,	Edward S. Sinnott,
Alfred J. Ward.	W. Frederick Fisher.

Second and Third Year Courses.

First Term:—

George D. Harding,
William S. Halsey.

Second Term:—

George D. Harding. Hugh T. Sadler.

GEOMETRICAL DRAWING.

First Term:—

George D. Harding,	Henry W. Dix,
Alfred J. Ward,	Edward S. Sinnott,
Honorio Fonseca,	W. Frederick Fisher,
Francisco Fonseca.	Edward D. Lace,
	E. H. Chetwood Aiken,
	William S. Halsey.

Second Term:—

Alfred J. Ward,	Francisco Fonseca,
Honorio Fonseca,	Edward S. Sinnott,
George D. Harding.	Edward D. Lace,
	Henry W. Dix.

GEOLOGY.

Second Term:—

P. Egerton Shaw.

Class I.	Class II.

ZOOLOGY.

First Term:—

William H. Sturge, Norman Leonard.
John H. Parsons.

Second Term:—

William H. Sturge,	Charles W. Phipps,
John H. Parsons,	Charles N. Hamper.
Norman Leonard.	

CLASS I. CLASS II.

BOTANY.

Second Term:—

Norman Leonard,
William H. Sturge.

LOGIC.

First Term:—

Frank E. Robinson.

James E. W. Cook,
John F. J. Tiddy.

Second Term:—

James E. W. Cook,
Frank E. Robinson.

MODERN HISTORY.

First Term:—

Mary I. Ogilvie,
Mary J. Sturge,
Winifred A. Ker,
Isabel Sturge,
Ethel M. Ker.

Charlotte M. Macdougall,
Lilian H. Ker.

Second Term:—

Mabel Wallis,
Helen Biggs.

Amelia M. Richards,
Isabel Sturge,
Ethel M. Ker,
Lilian H. Ker,
Charlotte M. Macdougall.

ENGLISH LITERATURE.

First Term:—

Frances L. Evans,
Millicent M. Fry,
Caroline E. Begbie.

Helen D. Biggs,
Margaret R. Tanner,
Isa F. Barham.

Second Term:—

Frances L. Evans,
Isa F. Barham,
Millicent M. Fry.

Susan M. Bernard,
Charlotte M. Macdougall,
Winifred A. Ker,
Ethel M. Ker,
Lilian H. Ker,
Helen D. Biggs.

GREEK.

ELEMENTARY.

First Term—Division I.:—

George M. Rice,
Arthur B. West.

Elizabeth W. Fry,
James Pringle,
William Pulford.

Class I.	Class II.
Division II.	
Elizabeth W. Fry, Ernest E. Smith.	E. Ashford Smith.
Second Term—Division I. :—	
James Pringle, William Pulford, George M. Rice, Arthur B. West.	Elizabeth W. Fry.
Division II.	
Elizabeth W. Fry.	Ernest E. Smith.

ADVANCED.

Second Term :—

Frank E. Robinson, William E. Tanner.	Ernest W. Burt.

LATIN.

ELEMENTARY.

First Term—Division I :—

Arthur B. West, Robert M. Leonard.	Christian C. Bernard, William Pulford.
Division II.	
E. Ashford Smith, Ernest E. Smith.	Henry G. C. Dring.

Second Term—Division I :—

Christian C. Bernard,
Robert M. Leonard,
William Pulford,
Arthur B. West.

Division II :—

E. Ashford Smith,
Ernest E. Smith.

ADVANCED.

Second Term :—

F. Claudia Prideaux, William E. Tanner.	Frank E. Robinson.

FRENCH.

ADVANCED.

First Term.

Evelyn Hinxman,
Ida A. Walters,
Susan M. Bernard,
William E. Tanner.

Class I.	Class II.
Second Term:—	
William E. Tanner.	Evelyn Hinxman.

GERMAN.

Elementary.

First Term:—

John F. J. Tiddy,
William Pulford,
George M. Rice.

Second Term:—

George M. Rice.	William Pulford, Francis G. Harrison.

Advanced.

First Term:—

Amelia M. Richards,
Helen D. Culross,
Isabel Sturge,
Christian C. Bernard,
Susan M. Bernard,
Kate M. Wood,
Ida A. Walters,
Mary J. Sturge.

Second Term:—

Helen D. Culross, Isabel Sturge, Amelia M. Richards.	Kate M. Wood, Ida A. Walters.

The list of Honours obtained in the Examinations held at the end of the third Term will be found in the Supplement to the Calendar.

EXAMINATIONS OF EVENING CLASSES.

CLASS I. CLASS II

INORGANIC CHEMISTRY.

ELEMENTARY.

First Term:—

Robert M. Leonard,
Helen M. Peake,
Mary L. Gosnell.

Ernest Smith,
Frank E. Scrase,
John F. Townsend,
Sidney B. White,
Beatrice Westover.

Second Term:—

John F. Townsend.
Robert M. Leonard.

ADVANCED.

First Term:—

Francis H. Blissett.

Second Term:—

Francis H. Blissett.

MATHEMATICS.

Second Term:—

Rosa F. Pritchard,
Llewelyn N. Hughes,
Edwin M. Tyrrell.

Elizabeth Parnell,
Herbert Barnes,
Owen J. Meredith,
Frederick J. Eastmead.

ELECTRICITY AND MAGNETISM.

First Term:—

John H. Price.

Second Term:—

John H. Price.

Edward H. Parry.

STEAM.

First Term:—

John H. Price,
Frederick J. Eastmead,
Llewelyn N. Hughes.

CLASS I. CLASS II.

Second Term:—

John H. Price,
Frederick J. Eastmead,
Llewelyn N. Hughes.

GEOLOGY.

Second Term:—

Hugh P. Leonard.

ZOOLOGY.

Second Term:—

Florence W. Herapath,
Sophia Maude.

MODERN HISTORY.

Second Term:—

Alice Jenner,
Georgina B. Shute.

ENGLISH LITERATURE.

Second Term:—

Annie H. Wise, Evelyn Pocock,
Richard C. Tuckett, Ida A. Walters.
F. Claudia Prideaux.

GREEK.

ELEMENTARY.

Second Term:—

William W. Joyce,
Robert A. Pickin.

FRENCH.

MEN.

ELEMENTARY.

First Term:—

John Clibbens.

Second Term:—

John Clibbens.

ADVANCED.

First Term:—

Charles Paul, William L. Weir.
Kedgwin W. Hicks, William C. Stagg.
Jasper White.

Second Term:—

Charles Paul, Jasper White.
Kedgwin W. Hicks.

Class I.	Class II.

WOMEN.

Elementary.

First Term:—

Class I.	Class II.
Kate Stiles,	Bessie A. Crossman,
Annie France,	Eva M. Williams,
Ellen Thomas,	Mary J. Lloyd.
Edith L. Lloyd.	

Second Term:—

Class I.	Class II.
Kate Stiles, Charlotte C. Edwards,	
Bessie A. Crossman,	
Annie France, Eva E. Stanton,	
Ellen Thomas.	

Advanced.

First Term:—

Class I.	Class II.
Helen E. France,	Jane Cullimore,
Alice E. Wyatt.	Florence J. Clune.

Second Term:—

Class I.	Class II.
Helen E. France,	Florence J. Clune,
Alice E. Wyatt.	Bessie Steadman.

GERMAN.

Elementary.

First Term:—

Class I.	Class II.
Charles Paul,	Alfred J. Smith,
Florence E. Skeates.	Helen E. France,
	George B. White.

Second Term:—

Class I.	Class II.
Florence E. Skeates.	Alfred J. Smith,
	Helen E. France,
	George B. White.

Advanced.

First Term:—

Class I.	Class II.
Charles E. Boucher.	Charles E. Tricks,
	Francis B. Bowley.

Second Term:—

Class I.	Class II.
Francis B. Bowley,	Annie Blinkhorn,
Charles Paul.	Ellen M. Bowley.

The List of Honours obtained in the Examinations held at the end of the third Term will be found in the Supplement to the Calendar.

STUDENTS OF THE COLLEGE.

Session 1885—86.

Day.

Aiken, E. H. Chetwoode
Atchley, Edward G.
Atkinson, Juan C.
Badock, Mrs.
Badock, Edith
Baker, Charles E.
Baker, Amy
Baker, Kate E.
Baker, Laura M.
Ballantyne, H. N.
Barham, Isa F.
Barnes, Alfred G.
Barrell, Frank R., B.A., B.Sc.
Bartlett, Lewis E.
Begbie, Caroline E.
Bernard, Christian C.
Bernard, Susan M.
Biggs, Helen D.
Birkett, Thomas B.
Blackburn, Beatrice
Bliss, William
Bolwell, Alfred R.
Burtt, Ernest W.
Capstick, George
Carpenter, Arthur W.
Carter, Gillmore T.
Clutterbuck, Medwin C.
Coleridge, Ernest A.
Connell, R. A.
Cook, James E.
Cooper, Amy K.
Cooper, Edith E.
Cornford, Mary F.
Crew, Edwin G.
Culross, Helen D.
Cundall, J. Tudor
Daniell, Mrs. James L.
Davies, David M., B.A.
Deane, Kate
Dix, Henry W.
Down, Richard J. W.
Dring, Henry G. C.
Evans, Frances L.
Evans, Mrs.
Fisher, W. Frederick
Forseca, Francisco
Forseca, Honorio
Fox, James
Francis, Alfred W.
Fry, Charles H.
Fry, Elizabeth W
Fry, Millicent M.
Gillam, Sidney H.
Gosnell, Janet
Gosnell, Mary L.
Grey, J. Temperley
Grundy, Herbert
Hall, E. George
Halsey, Ethel
Halsey, Mrs.
Halsey, William S.
Hamper, Charles N.
Harding, George D.
Hardwick, Francis W., B.A.
Harris, Evan R.
Harrison, G. Dennis B.
Harrison, Francis G.
Hartnell, Mary A.
Hartnell, Theodosia L.
Hawkes, William H.
Heath, Arthur J.
Hinxman, Evelyn
Holmes à Court, Charles
Holmes à Court, Richard H.
Hooper, Henry R.
Howell, George W. C.
Hughes, Fred C.
Jenkin, Richard J.
Jones, Edith A.
Jones, J. Henry

Ker, Ethel M.
Ker, Lilian H.
Ker, Winifred A.
Kennedy, Alice
Knee, Alfred W. C.
Lace, Edward D.
Leonard, Norman
Leonard, Robert M.
Levy, Rev. Joseph L., B.A.
Ligertwood, Walter H.
Lithgow, Helen
Littleton, John P.
Macdougall, Charlotte M.
Maude, Mrs. Sophia
Milward, Harold
Morgan, Edith S.
Morgan, Emily C. P.
Morgan, S. Wolferstan
Morrison, Helen
Moxley, Edwin
Newbolt, Emily C.
Norton, Anna
O'Brien, Florence
Ogilvie, Mary J.
Parsons, John H.
Peake, Arthur W.
Pease, A. Dorothea
Pease, Caroline S.
Pigeon, John H. R.
Pitt, George H.
Phipps, Charles W.
Prideaux, F. Claudia
Prideaux, Robert M.
Pringle, James
Pulford, William
Railton, Bernard L.
Reynolds, Lieut.-Colonel
Rice, George M.
Richards, Amelia M.
Robinson, Mrs. Edward
Robinson, Frank E.
Rogers, Lily
Rogers, Minnie
Sadler, Hugh T.
Shaw, P. Egerton
Shepherd, James H.
Sherring, Hugh J.
Shindler, James H.
Sinnott, Edward S.
Skinner, Rev. William H.
Smith, E, Ashford
Smith-Sparke, Amy
Smith, Ernest E.
Smythe, Frank T.
Southby, William P., B.A.
Spencer, Hugh
Sturge, Elizabeth
Sturge, Helen
Sturge, Isabel
Sturge, Mary T.
Sturge, William H.
Tanner, Agnes E.
Tanner, Margaret R.
Tanner, Sarah J.
Tanner, William E.
Tawney, Constance
Tawney, Mrs.
Taylor, William
Thomas, Herbert J.
Thomas, Lillie
Thomas, Thomas
Thomson, George S., M.D.
Tiddy, John F. J.
Townsend, John F.
Turner, Archer
Turner, Edith M.
Turrell, Sophia
Twiggs, Henry W.
Tyack, Llewelyn N.
Wait, Beatrice
Wait, Mabel S. K.
Wait, Mary E.
Walker, Kethleen
Wallis, Alice M.
Walters, Ida A.
Ward, Alfred J.
Watkinson, Kate
Wedmore, Constance
Wear, Preston, B.A.
West, Arthur B.
Whitwill, Ada
Whitwill, Bessie
Whitwill, Edith
Williams, Edith
Williams, Katharine I.
Williamson, Walter J.
Wilson, Theodore
Wood, Edith
Wood, Kate M.

The above are exclusive of Medical Students.

Evening.

Adams, Henry J.
Andrews, Florence E.
Atkinson, Juan C.
Bach, Charles
Baker, Florence A.
Baker, Kate E.
Baker, William N.
Barnes, Herbert
Bartlett, Lewis E.
Bernard, Adelaide
Bernard, Mrs. Marian
Billinge, Martha E.
Bindon, Gertrude
Bindon, Marion
Birche, Frederick W.
Blackburn, Beatrice
Blinkhorn, Annie M.
Blinkhorn, Emily S.
Blissett, Francis H.
Boucher, Charles E.
Bowley, Ellen M.
Bowley, Francis B.
Brayley, Albert
Bryant, Raymond M.
Brickwood, Ada
Browne, Georgina
Budgett, Frederick B.
Burton, George
Burton, James H.
Calder, Frank
Campagnac, Ernest T.
Carpenter, Arthur W.
Carter, Thomas M.
Christian, Emily M.
Clark, Robert M.
Clibbens, John
Clune, Florence I.
Coe, Jennie
Coram, Frederick J.
Cornall, Annie F.
Cornall, Arthur W.
Cornford, Mary F.
Copp, Herbert
Cox, Mrs. Mary
Crook, Henry C.
Crosby, Walter L. J.
Crossman, Bessie A.
Cruikshank, James W.
Cullimore, Jane
Cundall, Rose E.
Darnton, Florence M.
Darnton, Mary L.
Davis, Frank W.
Derrick, Louisa T.
Devine, Theophilus
Dinnick, Edgar W.
Down, Richard
Drew, L. Henrietta
Drew, Sibyl L.
Eastmead, Frederick J.
Edmunds, Elizabeth C.
Edwards, Charlotte C.
Ellis, William C.
Elworthy, Ernest W.
Evans, Henry E. R.
Ferris, Caroline
Ferris, Lydia M.
France, Annie
France, Helen E.
France, Katherine A.
Francis, Alfred W.
Frost, Bertram L.
Gavess, Jabez L.
Geake, Robert
Gee, Lizzie M.
George, William A.
Gibaud, Thomas K.
Gibbons, Emily C.
Gillespy, Mrs. Catherine
Gosnell, Mary L.
Granger, Blanche F. C.
Granger, Catherine A.
Greenslade, William.
Griffith, Henrietta E.
Hardy, Charles C.
Harrison, Francis G.
Harris, Robert W.
Hartnell, Emily A.
Heath, Arthur J.
Herapath, Florence W.
Heslop, Edith A.
Hicks, Kedgwin W.
Higgs, Herbert J.
Hill, William D.
Hillman, Cecil R.
Hillman, Charles E.
Hodges, Francis W.
Horn, Jessie A.

Howell, Arthur D.
Hughes, Fred C.
Hughes, Llywelyn N.
Hulbert, Emma
Hunt, Arthur W.
Innes, Frances M.
Irving, David
Isaac, Henry O.
Jarvis, George E.
Jenkins, George L.
Jenner, Alice
Johns, Edith
Jones, David S.
Jones, Mary E.
Jones, Sarah A.
Joyce, William N.
Keen, Elizabeth
Keevill, Arthur G.
Kerr, William R.
King, Alfred J.
Kingcote, Silvester C.
Kirshaw, John
Knee, Arthur L.
La Trobe, Henry P.
Lawrence, Edith I.
Lawrence, Edith V.
Lawrence, Emily M.
Lawrence, Gertrude
Lawrence, William V.
Lee, Harry J. B.
Lemon, Agnes B.
Leonard, Hugh P.
Le Ray, Edwin
Lewis, Elizabeth A.
Ligertwood, Walter H.
Lippoldt, Albine
Little, Arthur W.
Littlejohn, Janet
Lloyd, Arthur
Lloyd, David
Lloyd, Edith
Lloyd, Mary I.
Loxton, Samuel J.
Lyons, John T.
Marsland, Bertha V.
Martin, Annie B.
Maude, Mrs. Sophia
Meredith, Francis W.
Meredith, Owen J.
Metcalfe, Arthur W.
Mills, Frederick W.
Morrish, William J. M.
Morris, Patrick
Moss, Frank
Murphy, Anna F.
Muschamp, Ella M.
Nicolson, William H.
Nunn, Mabel P.
Parker, Alfred J.
Parker, James
Parnall, Elizabeth
Parry, Edward H.
Paul, Charles
Pauli, George W.
Pavey, Ada
Peake, Helen M.
Pearce, George W. H.
Percy, Minnie
Petter, Annie
Philips, Miles L.
Pickin, Robert A.
Pillinger, Edith M.
Pitt, Rachel W.
Pocock, Evelyn I.
Pole, Gertrude E.
Pollinger, Tom G.
Poole, Clara
Powell, Alfred W.
Praegar, Edward E. J.
Price, John H.
Prideaux, Augusta
Pritchard, Rosa F.
Prosser, Joseph G.
Prosser, Thomas
Pulford, William
Read, Edward H.
Reed, Henry A.
Rees, Annie E.
Richards, James
Richards, Thomas H.
Richards, William A.
Righton, William
Roach, Elizabeth
Roberts, Charles
Roberts, Henry A.
Robinson, Frank E.
Rogers, Frederick G.
Rogers, Henry
Schaffter, Alice E.
Scrase, Frank E.
Shaddick, Lucy
Shaw, Emily
Sheldon, William A.
Sherring, Hugh J.
Shindler, James H.
Shove, Kate I.

Shove, Lewis F.
Shute, Georgina B.
Silcox, George P.
Skeates, Florence
Skeates, Henry W.
Smith, Alfred J.
Smith, Charlotte M.
Smith, Ernest
Smythe, Frank T.
Specht, Peter P.
Spencer, Hugh
Spencer, Phyllis M.
Stagg, William C.
Stanton, Eva E.
Steadman, Bessie
Steadman, Kate E.
Sternberg, Frederica E.
Stiles, Kate
Stroud, Alice M.
Tanner, Agnes E.
Taylor, Thomas
Thomas, Edward
Thomas, Ellen
Thomas, Emma A.
Thomas, John
Thomas, Thomas
Tod, A. Florence
Townsend, John F.
Tricks, Charles E.
Trimnell, Ida G.
Tucker, Sydney T.
Tuckett, Richard C.
Tuckey, Sarah K.
Tyrrell, Edwin M.
Vint, Annie
Wareham, Barbara
Warren, Cromwell H.
Weston, Mary K.
Weston, Thomas H.
West, Thomas J.
Westover, Beatrice
Weedon, Henry W.
Weir, Preston, B.A.
Weir, William
Whereat, Alfred E. A.
White, George B.
White, Jasper
White, Sidney
Whitmore, Alice
Whitmore, Amy F.
Willcox, Robert
Williams, Eva M.
Williams, Leonora
Wilson, Louisa A.
Wise, Annie H.
Wise, Frances S.
Witt, Frederick G.
Wood, Kate M.
Woodward, John W.
Wyatt, Alice E.
Young, Margaret
Young, Thomas

Exclusive of Students attending College District Classes.

BRISTOL MEDICAL SCHOOL,

AFFILIATED TO

UNIVERSITY COLLEGE,

BRISTOL.

SESSION 1886-87.

THE WINTER SESSION

Will commence on FRIDAY, October 1st, 1886, and will continue for Six months, with a Recess at Christmas.

THE SUMMER SESSION

Will commence on MONDAY, May 2nd, 1887, and will terminate at the end of July.

ADMISSION OF STUDENTS.

Attendance will be given to enter Students and to issue Cards of Admission to Classes* on the following days :

Winter Session : FRIDAY, October 1st, 4 to 5 p.m.
Summer Session : MONDAY, May 2nd, 4 to 5 p.m.

E. MARKHAM SKERRITT, M.D.,
Dean

MEDICAL SCHOOL, UNIVERSITY COLLEGE,
TYNDALL'S PARK, BRISTOL.

* See Regulation 3, p. 11.

GOVERNING BODY.

W. PROCTOR BAKER, Esq. (1), Treasurer of University College; President of the Bristol General Hospital, *Chairman.*

E. C. BOARD, M.R.C.S. (4), Senior Surgeon to the Bristol Royal Infirmary.

G. F. BURDER, M.D., F.R.C.P. (5), Consulting Physician to the Bristol General Hospital.

Rev. J. W. CALDICOTT, D.D. (1).

C. D. CAVE, Esq. (2), President of the Bristol Royal Infirmary.

ALBERT FRY, Esq. (1), Chairman of the Council of University College.

LEWIS FRY, Esq., M.P. (1), Vice-Chairman of the Council of University College.

E. LONG FOX, M.D., F.R.C.P. (4), Consulting Physician to the Bristol Royal Infirmary.

HENRY MARSHALL, M.D., F.R.C.S.E., F.R.S.E. (5), Consulting Surgeon to the Bristol General Hospital.

Professor B. JOWETT, M.A. (1), Master of Balliol College, Oxford.

F. P. LANSDOWN, M.R.C.S. (5), Senior Surgeon to the Bristol General Hospital.

HENRY NAISH, Esq. (3), Treasurer of the Bristol General Hospital.

AUGUSTIN PRICHARD, F.R.C.S. (4), Consulting Surgeon to the Bristol Royal Infirmary.

E. MARKHAM SKERRITT, M.D. Lond., B.S., B.A., F.R.C.P. (6), Senior Physician to the Bristol General Hospital; Lecturer on Medicine at the Medical School, *Dean.*

R. SHINGLETON SMITH, M.D. Lond., B.Sc., F.R.C.P. (6), Physician to the Bristol Royal Infirmary; Lecturer on Physiology at the Medical School.

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1. Elected by the Council of University College.
2. Elected by the Committee of the Bristol Royal Infirmary.
3. Elected by the Committee of the Bristol General Hospital.
4. Elected by the Staff of the Bristol Royal Infirmary.
5. Elected by the Staff of the Bristol General Hospital.
6. Elected by the Faculty of the Bristol Medical School.

COURSES OF LECTURES.

WINTER SESSION.

MEDICINE.

WILLIAM H. SPENCER, M.A., M.D. Cantab., Physician to the Bristol Royal Infirmary; and

E. MARKHAM SKERRITT, M.D. Lond., B.S., B.A., F.R.C.P., Physician to the Bristol General Hospital.

SURGERY.

NELSON C. DOBSON, F.R.C.S., Surgeon to the Bristol General Hospital.

DESCRIPTIVE AND SURGICAL ANATOMY.

F. RICHARDSON CROSS, M.B. Lond., F.R.C.S., Ophthalmic Surgeon to the Bristol Royal Infirmary.

PRACTICAL ANATOMY.

DEMONSTRATOR—WILLIAM H. HARSANT, F.R.C.S., Surgeon to the Bristol Royal Infirmary.

This Department is under the superintendence of the Lecturer on Anatomy. The Demonstrator and the Medical Tutor direct the Students in their dissections.

PHYSIOLOGY.

R. SHINGLETON SMITH, M.D. Lond., B.Sc., F.R.C.P., Physician to the Bristol Royal Infirmary.

CHEMISTRY.

THOMAS COOMBER, F.C.S., Master of the Bristol Trades and Mining Schools.

HYGIENE.

DAVID DAVIES, M.R.C.S., late Medical Officer of Health to the City and County of Bristol.

SUMMER SESSION.

MIDWIFERY AND DISEASES OF WOMEN.

JOSEPH G. SWAYNE, M.D. Lond., Consulting Physician-Accoucheur to the Bristol General Hospital; and

A. E. AUST LAWRENCE, M.D., Physician-Accoucheur to the Bristol General Hospital.

MEDICAL JURISPRUDENCE.

REGINALD EAGER, M.D. Lond.; and

ALFRED J. HARRISON, M.B. Lond., Physician to the Bristol General Hospital.

This Course includes Lectures on the various forms of Insanity.

PATHOLOGY AND MORBID ANATOMY.

WILLIAM H. SPENCER, M.A., M.D. Cantab., Physician to the Bristol Royal Infirmary; and

E. MARKHAM SKERRITT, M.D. Lond., B.S., B.A., F.R.C.P., Physician to the Bristol General Hospital.

DEMONSTRATOR—BARCLAY J. BARON, M.B., C.M. Edin., Physician to the Bristol General Hospital.

OPERATIVE SURGERY AND SURGICAL PATHOLOGY.

W. POWELL KEALL, M.R.C.S., Surgeon to the Bristol General Hospital.

In this Course each Student performs surgical operations on the dead body. The Course also includes the examination of diseased structures, as illustrated in the contents of the Museum and otherwise.

PRACTICAL SURGERY.

ARTHUR W. PRICHARD, M.R.C.S., Surgeon to the Bristol Royal Infirmary.

This Course includes the following subjects:—The application of anatomical facts to Surgery, on the living person and on the dead body. The methods of proceeding and the manipulations necessary in order to detect the effects of disease and accidents on the living person and on the dead body. The use of Surgical Apparatus.

MATERIA MEDICA AND THERAPEUTICS.

JOHN E. SHAW, M.B. Edin., Physician to the Bristol Royal Infirmary.

PRACTICAL PHYSIOLOGY AND HISTOLOGY.

GEORGE F. ATCHLEY, M.B. Lond., Consulting Surgeon to the Bristol General Hospital.

DEMONSTRATORS—G. MUNRO SMITH, M.R.C.S., L.R.C.P.; and

J. MICHELL CLARKE, M.A., M.B. Cantab., Assistant-Physician to the Bristol General Hospital.

This Course includes instruction in the use of the microscope, the examination of the various tissues and organs of the body, and the use of physiological instruments and apparatus.

Each Student is required to provide himself with an efficient microscope and accessory apparatus.

BOTANY.

ADOLPH LEIPNER, Professor of Botany in University College.

The Botanical Garden now attached to University College affords to Students abundant opportunity for practical work in connection with this Class.

PRACTICAL CHEMISTRY.

THOMAS COOMBER, F.C.S., Master of the Bristol Trades and Mining Schools.

COMPARATIVE ANATOMY.

C. LLOYD MORGAN, Professor of Geology and Zoology in University College.

MEDICAL TUTOR—W. C. LYSAGHT, M.R.C.S., L.R.C.P.

Lectures will be given in conformity with the regulations for the Licence in Dental Surgery of the Royal College of Surgeons if a sufficient number of pupils present themselves.

TIME TABLE.

Winter Session.								Summer Session.							
Classes.	M.	Tu.	W.	Th.	F.	S.	Hours.	Classes.	M.	Tu.	W.	Th.	F.	S.	Hours.
Chemistry	×		×		×		9 a.m.	Practical Physiology	×		×		×		8 a.m.
Physiology	×		×		×		10 a.m.	Botany		×		×		×	10 a.m.
Anatomy		×		×		×	9 a.m.	Practical Chemistry...	×		×		×		9 a.m.
					×		11 a.m.	Materia Medica... ..		×		×		×	9 a.m.
Medicine...	×		×		×		9 a.m.	Midwifery	×	×	×	×	×		8 a.m.
Surgery		×		×		×	9 a.m.	Practical Surgery ...		×		×		×	9 a.m.
Hygiene	×				×		10 a.m.	Pathology	×		×		×		9 a.m.
								Operative Surgery ...		×	×		×		10 a.m.
								Medical Jurisprudence	×			×		×	10 a.m.
								Comparative Anatomy		×	×		×		10 a.m.

HOSPITAL PRACTICE:—

Royal Infirmary—Medical and Surgical Practice, at 12 noon daily. Operations, Tuesday and Friday, at 1.30 p.m.
General Hospital—Medical and Surgical Practice, at 1 p.m. daily. Operations, Thursday, at 1.30 p.m.

FEES.

Chemistry	£5 5s. for each Course.
Physiology	
Anatomy	
Medicine	
Surgery	
Midwifery	£4 4s. for each Course.
Comparative Anatomy	
Botany	£3 3s. for each Course.
Practical Physiology	
Practical Chemistry	
Materia Medica	
Practical Surgery	
Operative Surgery	
Pathology...	
Medical Jurisprudence	
Hygiene	£2 2s. for each Course.

Medical Tutor Fee.—Students of Anatomy or Physiology are required to pay a Medical Tutor Fee of £2 2s. *per annum.*

Practical Anatomy.—Students not belonging to the Anatomical Class may dissect on payment of a fee of £3 3s. per Session, in addition to the Medical Tutor Fee.

COMPOSITION FEE.—A Composition Fee of Sixty Guineas is received, which entitles the Student to the full course of Lectures required for the Degrees of the University of London, and the diplomas of the Royal College of Physicians, the Royal College of Surgeons (Membership), the Society of Apothecaries, and the Army and Navy Boards. The fee includes instruction by the Medical Tutor for two years. Should any Student fail to attend any course with sufficient regularity, unless from illness or other cause deemed satisfactory, he will have to attend again, and to pay the fee for such course beyond what he has already paid in the Composition Fee.

The Composition Fee may be paid in one sum, at the commencement of the first Session; or in two instalments of 40 guineas at the beginning of the first Session, and 20 guineas at the beginning of the second Session.

Hospital Practice.—For Fees for Hospital Practice see pp. 21 and 26.

INFORMATION FOR STUDENTS.

Every Student, prior to the commencement of professional studies, is required to pass one of the Preliminary Examinations in Arts prescribed by the General Medical Council. [See foot-note.] After having passed such an examination he must be registered as a Student of Medicine at the office of the Medical Council (299 Oxford Street, London). Information on these subjects may be obtained from the Dean of the Bristol Medical School.

Students can complete in Bristol the entire course of study required for the Medical and Surgical Degrees of the University of London, for the Diplomas of the Royal College of Physicians of London, the Royal College of Surgeons of England, and the Apothecaries' Society of London, and for the Examinations of the Army and Navy Boards. The lectures and instruction given at University College, Bristol, are adapted to the various Preliminary Arts Examinations above referred to, and also to the Matriculation* and Preliminary Scientific Examinations of the University of London; while the Medical School, the Royal Infirmary, and the General Hospital together provide for every detail of the professional curriculum required by the University of London and the above Examining Boards.

Every Student is required to pursue his medical studies for a period of four years from the date of registration before he can present himself for final examination and obtain a licence to practice. The period during which a Student must attend lectures and hospital practice, and the regulations as to the course of study, vary according to the degree or diploma he may wish to obtain. The lectures and hospital practice required by the Royal Colleges of Physicians and Surgeons and the Apothecaries' Society *can* be attended in three years. But candidates for the diplomas of these

* The University of London holds Matriculation Examinations at University College, Bristol, as one of its provincial centres, in June; and the Preliminary Examinations of the College of Preceptors, which are also recognised by the General Medical Council, are held at University College, Bristol, in March, June September and December.

bodies must be engaged in the acquirement of professional knowledge during a fourth year. It is, therefore, strongly recommended that the compulsory work should not be compressed into the minimum time allowed, but should be distributed over the whole period of four years, according to the plan laid down on pages 13 and 14. Thus ample time will be permitted for the effectual study of each subject in its proper place in the curriculum, and the Student will be able to devote himself solely to the subjects of the several examinations as the time for passing them arrives.

All necessary information as to the course to be pursued for any particular degree or diploma will be given by the Dean of the Bristol Medical School. Further particulars regarding the Infirmary may be obtained from the Dean of the Infirmary Faculty, Dr. Spencer, and respecting the Hospital from the Dean of the Hospital Faculty, Dr. Markham Skerritt.

GENERAL REGULATIONS.

1. Every Candidate for admission as a Student is required to produce a satisfactory testimonial of good character.

2. Every Student on his admission is required to subscribe in the General Register a declaration of acquiescence in the Regulations of the School.

3. Cards of admission to all or any of the Classes can be obtained only of the Dean, to whom all fees are to be paid in advance. The cards are to be taken to be countersigned by the Lecturers respectively, and *attendance on each Class dates from such signature.*

4. The attendance of Students on Lectures is registered. Periodical Examinations are held in all the Classes in accordance with the requirements of the Examining Boards, and attendance on these examinations is essential.

5. Students intending to present themselves for examination at the Royal College of Surgeons are required to give due notice to the Dean, and to pass a Test Examination in those subjects on which they will be examined at the College.

6. Certificates of attendance will be withheld from any Student whose conduct or attendance shall be deemed unsatisfactory.

7. In the event of faulty attendance, idleness, or misconduct on the part of any Students, the same will be reported to their parents or guardians after each of the periodical Class Prize Examinations.

8. The discipline of the School generally is under the charge of the Dean, or, in his absence, of the Medical Tutor, who will report any instances of misconduct. During the attendance of a Lecturer in any room for the purpose of teaching, he is charged with the maintenance of order therein.

9. The power of suspending or expelling any Student for misconduct, whether within the precincts of the School or elsewhere, is vested in the Governing Body.

MEDICAL TUTOR.

The Medical Tutor is in constant attendance at the School to assist Students in their practical Anatomical and Physiological studies.

ORDER OF STUDY.

FIRST YEAR.

Winter Session.	Summer Session.
Anatomy (bones, joints, muscles, and viscera).	Botany.
Physiology.	Materia Medica.
Chemistry.	Practical Chemistry.
Dissections.	Practical Physiology & Histology.
Surgical Hospital Practice.	Practical Pharmacy.
Post Mortem Demonstrations.	Surgical Hospital Practice.
	Examination of Surgical Patients.
	Post Mortem Demonstrations.

SECOND YEAR.

Winter Session.	Summer Session.
Anatomy.	Midwifery.
Physiology.	Practical Surgery.
Dissections.	Comparative Anatomy (for F.R.C.S., &c.).
Medical Hospital Practice.	Medical Hospital Practice.
Surgical Hospital Practice.	Surgical Hospital Practice.
Surgical Clinical Lectures.	Surgical Clinical Lectures.
Post Mortem Demonstrations.	*Post Mortem* Demonstrations.

N.B.—At the end of the Second Winter Session *the Student should be prepared to pass the Primary Examination of the Royal College of Surgeons, or the equivalent examination of some other Examining Board.*

THIRD YEAR.

Winter Session.	Summer Session.
Medicine.	Medical Jurisprudence.
Surgery.	Pathology and Morbid Anatomy.
Medical Hospital Practice.	Operative Surgery.
Medical Clinical Lectures.	Medical Hospital Practice.
Surgical Hospital Practice.	Medical Clinical Lectures.
Surgical Clinical Lectures.	Surgical Hospital Practice.
Post Mortem Demonstrations.	Surgical Clinical Lectures.
	Post Mortem Demonstrations.

FOURTH YEAR.

Winter Session.	Summer Session.
Medicine.	Medical Hospital Practice.
Hygiene.	Medical Clinical Lectures.
Medical Hospital Practice.	*Post Mortem* Demonstrations.
Medical Clinical Lectures.	
Post Mortem Demonstrations.	

NOTE.—Students who intend to complete their Lectures and Hospital Practice in three years must attend Lectures on Medicine during the second Winter Session, and Lectures on Clinical Medicine during the second Winter and Summer Sessions.

DRESSERSHIPS.—Students are strongly advised not to become Dressers until after passing the Primary Examination.

CLINICAL CLERKSHIPS may be most advantageously held in the third or the fourth year.

PRACTICAL MIDWIFERY.—Students who have attended the Midwifery Course will be provided with cases to attend, under competent supervision.

CLINICAL STUDY OF THE DISEASES OF WOMEN (as required for the L.R.C.P. Lond. Exam.). Six months should be devoted to this subject in the third or the fourth year.

INSTRUCTION IN VACCINATION may conveniently be obtained in the third or the fourth year.

PRIZES AND CERTIFICATES OF HONOUR.

Prizes and Certificates of Honour are publicly distributed at the beginning of each Summer Session to the Students who have been successful in the examinations of the year.

No prize can be obtained twice by the same Student.

Prizes and Certificates of Honour are awarded in *each* of the following subjects:

For First Year's Students.—Anatomy and Physiology—Chemistry—Materia Medica—Practical Physiology and Histology—Botany—Practical Chemistry.

For Second Year's Students.—Anatomy—Physiology—Practical Anatomy—Midwifery—Practical Surgery. *Certificates* in Comparative Anatomy.

For Third Year's Students.—Medicine (open to Students of the third or the fourth year)—Surgery—Pathology—Medical Jurisprudence—Operative Surgery.

For Fourth Year's Students.—*Certificates* in Hygiene.

HOSPITAL PRACTICE AND CLINICAL LECTURES.

Hospital Practice may be attended either at the Bristol Royal Infirmary or at the Bristol General Hospital.—See pages 18 and 24.

BRISTOL ROYAL INFIRMARY.

Honorary and Consulting Physicians:

FREDERICK BRITTAN, M.D.
ALEXANDER FAIRBROTHER, M.D.
EDWARD LONG FOX, M.D.

Honorary and Consulting Surgeons:

JOHN HARRISON, F.R.C.S.
AUGUSTIN PRICHARD, F.R.C.S.

Physicians:

WILLIAM H. SPENCER, M.A., M.D., Cantab., *Lecturer on Medicine and Pathology at the Medical School.*

R. SHINGLETON SMITH, M.D. Lond., B.Sc., F.R.C.P., *Lecturer on Physiology at the Medical School.*

HENRY WALDO, M.D.

JOHN E. SHAW, M.B. Edin., *Lecturer on Materia Medica at the Medical School.*

Assistant Physician:

ARTHUR B. PROWSE, M.D. Lond., F.R.C.S.

Surgeons:

EDMUND C. BOARD, M.R.C.S.

CHRISTOPHER H. DOWSON, M.R.C.S.

ARTHUR W. PRICHARD, M.R.C.S., *Lecturer on Practical Surgery at the Medical School.*

J. GREIG SMITH, M.A., M.B., C.M.

WILLIAM H. HARSANT, F.R.C.S., *Demonstrator of Anatomy at the Medical School.*

Ophthalmic Surgeon:

F. RICHARDSON CROSS, M.B. Lond., F.R.C.S., *Lecturer on Anatomy at the Medical School.*

Assistant-Surgeon:

J. PAUL BUSH, M.R.C.S.

House-Surgeon:

J. DACRE, M.R.C.S.

House Physician:

J. SWAIN, M.B. Lond.

Junior Medical Officer and Pathologist:

H. THURSTON, M.R.C.S.

The Infirmary was founded in the year 1735, and is one of the largest provincial hospitals in England. It contains 264 beds.

The Infirmary has recently undergone a complete renovation in accordance with the most approved modern principles of hospital construction. It includes a large ward exclusively appropriated to children, separate ward for Eye cases and other special purposes, and two wards apart from the main building for cases requiring isolation. It is provided with all the necessary appliances for a complete clinical education.

IN-PATIENTS.

Medical and Surgical cases are admitted daily at eleven o'clock.

OUT-PATIENTS.

The Out-patient department is very extensive, and the whole of its resources are utilised for the instruction of Students. This department is under the charge of the Physicians and Surgeons, the Assistant-Physician and the Assistant-Surgeon. Students have opportunities for examining the cases, and are instructed in diagnosis and modes of treatment. For Students this department is of very great value, as the diseases treated in it constitute the large majority of ordinary cases met with in practice.

THE LIBRARY

contains nearly 3,000 volumes, comprising most of the standard works on Medicine, Surgery, and the cognate sciences; also the Medical Periodicals of the day. Students are allowed to take home any books they may require.

THE MUSEUM

(Founded by Richard Smith, Esq., formerly Surgeon to the Infirmary)

is open to all Students, under the supervision of the Curator. It contains a very large series of preparations of diseased bones; a remarkable collection of calculi, including upwards of 500 groups; numerous pathological preparations, arranged with a special view to the study of pathology; a Materia Medica collection; and a large collection of illustrative microscopic slides.

A Preparation Room and a Histological Room are attached to the Museum, in which the Students have the opportunity of working under instruction and supervision.

THE DISPENSARY AND LABORATORY.

In this department Students are instructed in Practical Pharmacy, the analysis of urine, and other chemical manipulations connected with practical medicine.

CLINICAL INSTRUCTION.

In the Wards.—The wards are visited daily, by the Physicians at twelve o'clock and by the Surgeons at one o'clock, when Clinical instruction is given to the Students in attendance.

On Saturdays the Physicians meet at one o'clock, and the Surgeons meet at half-past one o'clock, in the wards, for consultation on such cases as may require it.

In the Out-Patient Department.—Instruction is given by the Physicians and Surgeons, the Assistant Physician and the Assistant Surgeon. A special system of Instruction and Dressing is organised for First Year's Students in this department.

Operations are performed, except in cases of emergency, on Tuesdays and Fridays at half-past one o'clock.

Clinical Lectures are given regularly during the Winter and Summer Sessions, by the Physicians on Saturdays at twelve o'clock, and by the Surgeons on Fridays at twelve o'clock. Attendance on these lectures is registered, and certificates are given accordingly.

Post Mortem Examinations are conducted at twelve o'clock under the direction of one of the Physicians or Surgeons or the Pathologist, and demonstrations are given on the cases to the Students in attendance.

Instruction is also given in the following

SPECIAL CLINICAL DEPARTMENTS.

Ophthalmic Department.—Demonstrations and instruction in Diseases of the Eye and the use of the ophthalmoscope are given by Mr. Arthur W. Prichard on Thursdays at eleven o'clock, and by Mr. F. Richardson Cross on Saturdays at eleven o'clock.

Obstetric Department.—Special instruction in Diseases peculiar to Women is given in the wards and out-patient rooms by Mr. J. Greig Smith on Wednesdays at eleven o'clock.

Department for Diseases of the Throat and Ear.—Demonstrations and instruction, including the use of the laryngoscope and other apparatus, are given by Mr. Harsant on Tuesdays at eleven o'clock.

Department for Diseases of Children.—Special facilities are afforded for the study of children's diseases in the ward set apart for the purpose.

CLINICAL APPOINTMENTS.

Dresserships.—Students are appointed to Dresserships after the first year of study. Dressers attend to the patients in the wards and in the out-patient department, and assist at operations under the direction of the Surgeons.

Resident Dresserships.—Students are appointed by the Surgeons from the most diligent and qualified of the Dressers to reside in the Infirmary in weekly rotation. They are in charge of all casualties, under the supervision of the resident Medical Officers. By this privilege, and from the number of accidents happening in the factories, among the shipping, and in the neighbourhood generally, they have more than ordinary opportunities for learning Practical Surgery.

Clinical Clerkships.—Students are appointed to Clinical Clerkships in their third and fourth years of study. The Clinical Clerks alone have the privilege of keeping the case-books and visiting the wards by themselves, and they receive special clinical instruction.

Pathological Clerkships.—A Pathological Clerk is appointed every four months from those Students who send in their names for the office. It is his duty to make all *Post Mortem* Examinations and keep the pathological register during his term of office, under the direction of one of the Physicians or Surgeons or the Medical Superintendent.

Obstetric Clerkships.—Students who have attended lectures on Midwifery, and also entered to the Surgical practice of the Infirmary, may take out an Obstetric Clerkship under the Surgeon

in charge of the Obstetric department. The Obstetric Clerks have the privilege of keeping the case-books and assisting at operations and examinations of patients.

SCHOLARSHIPS AND PRIZES.

I.—*Two Entrance Scholarships*, of the value of Thirty-five Guineas and Ten Guineas respectively, are offered for competition annually on the last Saturday in October. The competition is open to Perpetual Students of the Infirmary who shall have begun the study of Medicine at that Institution in the current Winter or in the previous Summer Session. The examination is in subjects of general education.

II.—*Suple Medical Prize* (consisting of a Gold Medal, value Five Guineas, and Seven Guineas in money). Bequeathed by the late Robert Suple, Esq. Open to Students in their fourth year of study at the Royal Infirmary and Bristol Medical School, who have had no previous study at a recognised Medical School.

III.—*Suple Surgical Prize* (consisting of a Gold Medal, value Five Guineas, and Seven Guineas in money). Open to Students in their third year of study at the Infirmary and Bristol Medical School, who have had no previous study at a recognised Medical School.

IV.—*Clarke Prize.* Bequeathed by the late Henry Clarke, Esq., Consulting Surgeon to the Infirmary. Value, Fifteen Guineas. Awarded annually to that Student who, being in his third year of study at the Infirmary and Bristol Medical School, shall obtain the highest aggregate number of marks in the Class Examinations open to Students of the third year, held at the Bristol Medical School during the third Winter Session.

V.—*Tibbits' Memorial Prize.* Founded by public subscription. Value, Nine Guineas. Open annually to Students of the Infirmary not possessing a Medical or Surgical qualification, for proficiency in Practical Surgery.

VI.—*Crosby Leonard Prize.* Bequeathed by the late Crosby Leonard, Esq., Consulting Surgeon to the Infirmary. Value, Seven Guineas. Awarded annually to that student who, during

the third year of his attendance upon the Surgical practice of the Infirmary, shall, in the opinion of the Surgeons, furnish the best written reports of ten Surgical cases occurring in the Surgical wards of the Infirmary.

VII.—*Pathological Prize.* Value, Three Guineas. Awarded to the Pathological Clerk at the expiration of his term of office (four months), if his duties have been performed to the satisfaction of the Faculty. Three such prizes are awarded annually.

ADMISSION OF STUDENTS.

Students may enter for Medical or Surgical Practice for six months or more. Those who enter for Medical or Surgical Practice are entitled to attend the practice of all the Physicians or all the Surgeons at the usual daily visits, and to attend Clinical lectures and the instruction in the special departments. Those who also take out Clinical Clerkships or Dresserships attach themselves to some one Physician or Surgeon, under whose direction they act and from whom they receive special Clinical instruction.

Application for information and admission to be made to the Dean of the Faculty, Dr. Spencer.

FEES.

An Entrance Fee of Two Guineas to the Infirmary, and Subscription of One Guinea per annum to the Library.

	Six Months.	One Year.	Perpetual.
Medical Practice ..	7 Guineas	12 Guineas	20 Guineas
Surgical Practice ..	7 "	12 "	20 "
Medical and Surgical Practice together, in one payment.		20 "	35 "

The above Fees include Clinical Lectures.

Clinical Clerkship ..	5 Guineas 8 Guineas
Dresserships	5 Guineas for each six months.
Obstetric Clerkship ..	3 Guineas for each three months.

All fees must be paid to the Secretary, Lieutenant-Colonel Graham, at the Infirmary.

BRISTOL GENERAL HOSPITAL.

Honorary and Consulting Physician:
GEORGE F. BURDER, M.D., F.R.C.P.

Honorary and Consulting Surgeons:
ROBERT W. COE, F.R.C.S.
HENRY MARSHALL, M.D., F.R.C.S. Edin., F.R.S. Edin.
GEORGE F. ATCHLEY, M.B. Lond.

Honorary and Consulting Physician-Accoucheur:
JOSEPH G. SWAYNE, M.D. Lond., *Lecturer on Midwifery at the Medical School.*

Physicians:
E. MARKHAM SKERRITT, M.D. Lond., B.S., B.A., F.R.C.P., *Lecturer on Medicine and on Pathological Anatomy at the Medical School.*
ALFRED J. HARRISON, M.B. Lond., *Lecturer on Medical Jurisprudence at the Medical School.*
BARCLAY J. BARON, M.B., C.M. Edin., *Demonstrator of Pathology and Morbid Anatomy at the Medical School.*

Surgeons:
F. POOLE LANSDOWN, M.R.C.S.
NELSON C. DOBSON, F.R.C.S., *Lecturer on Surgery at the Medical School.*
WILLIAM P. KEALL, M.R.C.S., *Lecturer on Operative Surgery at the Medical School.*
CHARLES F. PICKERING, F.R.C.S.

Physician-Accoucheur:
A. E. AUST LAWRENCE, M.D., *Lecturer on Midwifery and Diseases of Women at the Medical School.*

Assistant-Physician:
J. MICHELL CLARKE, M.A., M.B. Cantab., *Demonstrator of Physiology at the Medical School.*

Assistant-Surgeon:
WILLIAM J. PENNY, F.R.C.S.

Pathologist:
BARCLAY J. BARON, M.B., C.M. Edin., *Demonstrator of Pathology and Morbid Anatomy at the Medical School.*

Dentist:
THOMAS C. PARSON, M.R.C.S., *Lecturer on Dental Mechanics at the Medical School.*

House-Surgeon:
W. H. C. NEWNHAM, M.A., M.B. Cantab.

Physicians' Assistant:
A. N. LITTLE, M.R.C.S.

Assistant House-Surgeon:
J. B. WEBB, M.R.C.S.

The Hospital, founded in 1832, is situated in a populous district near the Docks, Collieries, Manufactories, and Railway Stations, from which sources the Wards are supplied with a great variety of important cases.

The present building was completed and occupied in 1858, and is furnished with many modern improvements. It contains 164 beds, with a special Children's Ward, and also Private Wards and Isolated Wards.

OUT-PATIENT DEPARTMENT.

This department affords a large and most valuable field of observation. It is under the care of the Physicians and the Surgeons, the Physician-Accoucheur, the Assistant-Physician, and the Assistant-Surgeon, by whom the Students are instructed in the practical examination of patients and the treatment of the various forms of disease here met with.

In-patients are admitted daily (Sundays excepted) at half-past twelve o'clock.

Out-patients are admitted daily at the same hour.

Casualties.—Emergencies and casualties are admitted at all hours by the Resident Medical Officers.

SCHOLARSHIPS AND MEDALS.

Lady Haberfield Entrance Scholarship.—This Scholarship, founded in 1875, of the value of Thirty Guineas, the interest of £1,000 bequeathed for the purpose by the late Lady Haberfield, is awarded annually at the commencement of the Winter Session, after a competitive examination in subjects of general education.

Second Entrance Scholarship.—An additional Entrance Scholarship of the value of £20 is awarded when more than six Candidates present themselves.

Clarke Scholarship.—A Surgical Scholarship, of the value of £15, founded by H. M. Clarke, Esq., of London, is awarded annually, at the end of the Winter Session, after an examination in Surgery.

Sanders Scholarship.—A Scholarship founded by the late John Nash Sanders, Esq., of the value of £22 10s., is awarded annually,

at the end of the Winter Session, after examination in Medicine, Surgery, and Diseases of Women.

Martyn Memorial Pathological Scholarships.—Founded in 1878, by public subscription in memory of the late Dr. Samuel Martyn, Physician to the Hospital. *Two Scholarships*, each of the value of £10, are awarded annually: one at the end of the Summer Session, and one at the end of the Winter Session. A Student may, at the option of the Faculty, hold both these Scholarships. After a competitive examination in Pathology and Morbid Anatomy, the successful candidate is appointed Pathological Clerk to the Hospital, for the term of six months.

Committee Gold Medal.—This Medal, presented by the Committee of the Hospital, is awarded annually at the end of the Winter Session to the Student of the fourth year who has most distinguished himself during his career at the Hospital and the Medical School.

Committee Silver Medal.—This Medal, presented by the Committee of the Hospital, is awarded annually at the end of the Winter Session, to the next most distinguished Student of the fourth year.

The rules relating to the several scholarships may be had on application.

THE LIBRARY.

The Library, with a commodious Reading Room, contains a good and increasing collection of Medical Works, the principal Journals, excellent Microscopes, and other Physical Apparatus. Instruction in the use of the Microscope and Chemical Analysis, in connection with the Clinical Teaching, is given by the Faculty.

Students are allowed to take home any books they may require.

THE MUSEUM.

The Museum contains numerous interesting and instructive specimens. Pathological Clerks are appointed from the Students of the Hospital. (See Scholarships, page 24.)

CLINICAL INSTRUCTION.

The whole of the practice of the Hospital, including the special Departments mentioned below, is open to the Students of the Hospital.

Wards.—The Wards are visited daily, by the Physicians and the Surgeons at half-past one, when general Clinical Instruction is given.

Out-patient Department.—Instruction is given daily by the Physicians and the Surgeons, the Assistant-Physician and the Assistant-Surgeon. Students are specially advised to avail themselves of the opportunity which this Department affords of acquiring accuracy in the physical examination of patients and the diagnosis and treatment of disease.

Operations.—Surgical Operations, except in cases of emergency, are performed on Thursdays, at half-past one o'clock.

Clinical Lectures are given throughout the Winter and Summer Sessions, by the Physicians on three days of the week, and by the Surgeons every Wednesday at twelve o'clock. (See Time Table, page 27.)

Post Mortem Examinations are conducted, and Pathological Demonstrations given, by the Pathologist, at two o'clock.

SPECIAL DEPARTMENTS.

In these Departments instruction is given in the use of the various instruments and appliances special to each.

Diseases of Women.—Dr. Aust Lawrence visits on Mondays and Thursdays at twelve o'clock, and gives Clinical Instruction in the Diseases peculiar to Women.

Diseases of the Skin.—Patients affected with Skin Diseases are seen by Dr. Harrison, at one o'clock, on Fridays.

Diseases of the Eye.—In this Department, Ophthalmic cases are seen on Wednesdays and Saturdays, at one o'clock, by Mr. Keall.

Diseases of the Ear.—Patients are seen on Mondays, at twelve o'clock, by Mr. Pickering.

Diseases of the Throat.—Dr. Barclay Baron sees patients affected with Diseases of the Throat on Wednesdays and Saturdays, at one o'clock.

Diseases of Children.—In addition to the special Children's Ward in the Hospital, the Out-patient Department affords abundant material for the study of the Diseases of Children.

Dental Surgery.—Mr. Parson attends on Mondays and Thursdays, at nine o'clock, and gives practical instruction in Dental Surgery.

PRACTICAL PHARMACY.

Instruction in Practical Pharmacy is given to Students on payment of a Laboratory Fee to the Hospital.

CLINICAL CLERKS, DRESSERS, AND RESIDENT PUPILS.

Clinical Clerks.—While ordinary pupils enter to the general practice and accompany the Physicians on their usual visits, Students who become Clinical Clerks, besides this, place themselves under one Physician, from whom they receive private instruction in the practice of medicine. The Clinical Clerks alone have the privilege of recording cases and visiting the wards by themselves.

Dressers reside in the Hospital by rotation and free of expense. They have the privilege of dressing the cases in the wards, and of attending the minor casualties, and also the severe accidents, under the direction of the House-Surgeon.

Obstetric Clerks—Students can enter as Obstetric Clerks, under the Physician-Accoucheur, for periods of three months.

Dressers to the Eye and Ear Departments respectively are appointed from amongst the Students of the Hospital, for periods of three months, without payment of fee.

FEES.

	Six Months.	One Year.	Perpetual.
Medical Practice	£6	£10	£20
Surgical Practice	6	10	20
Medical and Surgical Practice together, in one payment ..	.. ..		35 Guineas.

The above Fees include Clinical Lectures.

Clinical Clerkship	5 Guineas for six months.
Dresserships	5 Guineas for six months.
Obstetric Clerkship	3 Guineas for three months.
Library Fee	1 Guinea on entrance.

All Fees are paid to the Secretary, at the Hospital.

BRISTOL GENERAL HOSPITAL.

TIME TABLE OF CLINICAL INSTRUCTION.

	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
Visits to Wards—Physicians	1 p.m. Dr. Markham Skerritt.	2 p.m. Dr. Harrison. Dr. Baron.	2 p.m. Dr. Markham Skerritt.	2 p.m. Dr. Baron.	1 p.m. Dr. Markham Skerritt. Dr. Harrison.	
Visits to Wards—Surgeons	1.30 p.m. The Surgeon for the week.	1.30 p.m. Mr. Lansdown. Mr. Dobson	1.30 p.m. Mr. Keall. Mr. Pickering.	1.30 p.m. The Surgeon for the week.	1.30 p.m. Mr. Lansdown. Mr. Dobson.	1.30 p.m. Mr. Keall. Mr. Pickering.
Operations				1.30 p.m.		
Medical Out-Patients	1 p.m. Dr. Baron.	1 p.m. Dr. Harrison. Dr. Baron.	1 p.m. Dr. Markham Skerritt.	1 p.m. Dr. Baron.	1 p.m. Dr. Harrison.	1 p.m. Physician's Assistant.
Surgical Out-Patients	1 p.m. The Surgeon for the week.	1 p.m. Mr. Lansdown. Mr. Dobson.	1 p.m. Mr. Keall. Mr. Pickering.	1 p.m. The Surgeon for the week.	1 p.m. Mr. Lansdown. Mr. Dobson.	1 p.m. Mr. Keall. Mr. Pickering.
Clinical Lectures ..	*Medical.*—2 p.m. Dr. Baron.	*Medical.*—2 p.m. Dr. Harrison.	*Surgical.*—12 noon. The Surgeons in turn.		*Medical.*—2 p.m. Dr. Markham Skerritt.	
Diseases of Women ..	12 noon. Dr. Aust Lawrence.			12 noon. Dr. Aust Lawrence.		
Diseases of the Skin		1 p.m. Dr. Harrison.			1 p.m. Dr. Harrison.	
Diseases of the Eye			1 p.m. Mr. Keall.			1 p.m. Mr. Keall.
Diseases of the Ear	12 noon. Mr. Pickering.		1.30 p.m. Mr. Pickering.			
Diseases of the Throat			1 p.m. Dr. Baron.			1 p.m. Dr. Baron.
Dental Surgery ..	9 a.m. Mr. Parson.			9 a.m. Mr. Parson.		
Post-Mortem Examinations	At 2 p.m. by the Pathologist.					

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Belfield, C. W., 1872 and '73.
Benham, W. T., 1868, '69 and '70.
Birch, De B., 1873 and '74.
Blacker, E., 1876.
Boissier, A. H., 1877 and '78.
Burleigh, H. A., 1885.
Bush, J. P., 1880 and '81.
Capron, H. J., 1882 and '84.
Chute, H. M., 1868, '69 and '70.
Cripps, C. C., 1875.
Cunningham, A. G., 1880.
Day, W. A., 1877.
Devis, H. F., 1884.
Evans, C. E., 1883.
Fardon, J. H., 1885.
FitzGerald, C., 1869.
Fendick, R. W., 1872.
Flemming, C. E. S., 1884 and '85.
Francis, W. H., 1878 and '80.
Glasson, C. J., 1883.
Gray, A. M., 1884.
Guy, J. R., 1875.
Hamilton, H., 1884 and '85.
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Jenkins, J., 1881.
Jones, C. C., 1875.
Jones, F. F., 1884 and '85.
Jones, W. A., 1881.
Joseph, A. H., 1883 and '84.
Kiddle, I., 1881.
King, A. J., 1869.
Knapp, E. M., 1876.
Lace, F., 1885.
Lawrence, A. E. A., 1870 and '71.
Little, A. N., 1881, '82, '83 and '85.
Logan, F. T. B., 1877, '78 and '79.
Lysaght, W. C., 1881 and '85.
Mackenzie, J., 1871.
Marks, R. J., 1885.
Marsh, T. A. P., 1877, '78, '79 and '80.
Marsh, W. G. H. B., 1875.
Marshall, L. W., 1869 and '70.
Massiah, B. J., 1871, '72 and '73.
Meaden, C., 1885.
Meaden, E. H., 1882.
Morgan, S. W., 1885.
Morton, F., 1878 and '83.
Myles, J. P., 1880 and '81.
Myles, G. T., 1880.
Newman, C., 1872, '73 and '74.
Norton, T. C., 1876 and '77.
Ord, W. T., 1882.
Palmer, F. C., 1874.
Parker, A. F., 1874.
Parry, J. H., 1877.
Peck, F. S., 1878.
Penruddocke, C., 1878.
Pocock, H. I., 1883.
Prichard, A. W., 1870, '71, '72 and '73.
Procktèr, A. E., 1869.
Rankin, L. K., 1881.
Richards, T., 1883 and '84.
Roué, W. B., 1878 and '79.
Rudge, C. K., 1878.
Rudge, H. T., 1880, '81 and '82.
Salmon, L. E. A., 1879, '80, '81 and '82.
Semple, H. F., 1885.

Simmons, H., 1882.
Smith, G. M., 1877.
Stevens, F. G., 1872 and '74.
Stiles, T. M., 1884 and '85.
Sturge, W. A., 1869 and '70.
Swayne, W. C., 1882 and '85.
Taylor, F., 1875.
Taylor, J., 1874 and '75.
Thorold, W. G., 1882, '83 and '84.
Thurston, H. C., 1881, '82 and '83.
Tomkins, A. J., 1882, '83, 84 and 85.
Tomkins, H. H., 1880, '82 and '83.
Trask, J. E., 1884 and '85.
Tratman, F., 1879, '80, '81 and '84.
Trevelyan, B. R. T., 1884.
Visger, H., 1879.
Waldo, H., 1870.
Ware, W. H., 1885.
Weatherley, L. A., 1872.
Webb, J. B., 1885.
Weir, F. W., 1880, '82 and '84.
Wheeler, W. H., 1878.
Whitfield, W. J. C., 1872 and '76.
Williams, L. H., 1883.
Williams, W. R., 1872 and '76.
Williams, P. W., 1881, '82, '83 and '84.
Windsor-Aubrey, H. W., 1880, '81 and '83.
Young, A. S. W., 1874.
Young, C. L., 1877.

LIST OF SCHOLARSHIPS, PRIZES, AND CERTIFICATES OF HONOUR FOR THE YEAR 1885-86.

MEDICAL SCHOOL.

Summer Session.

Practical Chemistry	*Prize*, H. Hill. *Certificates*, S. W. Morgan, W. Molesworth, J. T. Grey, H. L. Ewens, R. H. Norgate, H. L. Ormerod.
Practical Physiology and Histology	*Prize*, W. Molesworth. *Certificates*, J. T. Grey, S. W. Morgan, H. L. Ewens, W. Taylor.
Botany	*Prize*, J. T. Grey. *Certificate*, H. L. Ormerod.
Materia Medica and Therapeutics	*Prize*, G. H. Barker. *Certificates*, J. T. Grey, S. W. Morgan, H. Hill, C. A. Griffiths.
Obstetric Medicine	*Prize*, M. E. Leicester. *Certificates*, G. H. Skinner, B. R. T. Trevelyan, J. H. Fardon, B. Hamilton, F. Lace, H. Hamilton.

Practical Surgery	*Prize*, J. H. Fardon. *Certificates*, W. J. Watkins, B. R. T. Trevelyan, T. M. Stiles, and *æq.* H. H. Hill, G. H. Skinner.
Medical Jurisprudence	*Certificates*, H. A. Spencer, H. F. Semple, H. A. Burleigh.
Pathology and Morbid Anatomy	*Prize*, W. M. Barclay. *Certificates*, H. A. Spencer, H. F. Semple.
Operative Surgery	*Prize*, W. M. Barclay. *Certificates*, L. H. Williams, H. F. Semple, F. H. Hudson, H. A. Burleigh.

WINTER SESSION.

Anatomy and Physiology, Junior Class	*Prize*, T. C. Grey.
Junior Class of Anatomy ...	*Lecturer's Prize*, E. G. Hall. *Certificates*, G. F. Bergin, L. W. Dryland, R. C. Leonard, H. L. Ormerod, C. B. Gratte.
Junior Class of Physiology ...	*Certificates*, E. G. Hall, H. L. Ormerod, G. F. Bergin, R. C. Leonard, C. A. Griffiths.
Senior Class of Anatomy ...	*Prize*, S. W. Morgan. *Lecturer's Prizes*, *æq.* J. T. Grey, W. Molesworth. *Certificates*, H. Hill, H. F. Mole.
Senior Class of Physiology ...	*Prize*, S. W. Morgan. *Certificates*, J. T. Grey, *æq.* H. Hill and W. Molesworth, W. Taylor.
Practical Anatomy	*Prize*, H. F. Mole. *Prosector's Certificates*, *æq.* H. F. Mole, W. Molesworth, S. W. Morgan.
Chemistry	*Prize*, T. C. Grey. *Certificates*, H. L. Ormerod, G. F. Bergin, C. A. Griffiths, R. C. Leonard.
Medicine	*Prize*, T. M. Stiles. *Certificate*, F. Calder.
Surgery	*Prize*, T. M. Stiles. *Certificate*, F. Calder.

BRISTOL ROYAL INFIRMARY.

Entrance Scholarships—	
First, value 35 guineas ...	E. G. Hall.
Second, value 10 guineas ...	H. L. Ormerod.
Suple's Medical Prize, a Gold Medal and Seven Guineas in money	H. F. Semple.
Second Prizes, Five Guineas each	*æq.* A. H. Joseph. R. J. Marks.
Suple's Surgical Prize, a Gold Medal and Seven Guineas in money	T. M. Stiles.
Clark Prize, of the value of £15, awarded to the most successful Student of the third year	T. M. Stiles.
Pathological Prizes	H. J. Capron, A. W. Riddell, L. H. Williams, H. I. Pocock.
Tibbits' Memorial Prize, of the value of £9 9s., for Proficiency in Practical Surgery	H. F. Semple.
Crosby Leonard Prize, of the value of £7 7s., for Proficiency in Surgery	H. F. Semple.

BRISTOL GENERAL HOSPITAL.

Martyn Memorial Entrance Scholarship, of the value of £20, for Proficiency in Classics, Mathematics, Modern Languages and Physics	T. C. Grey.
Clark Scholarship, of the value of £15, for Proficiency in Surgery	W. E. Stevens.
Sanders Scholarship, of the value of £22 10s., for Proficiency in Medicine, Surgery, and Obstetric Medicine	W. M. Barclay.
Lady Haberfield Prize, of the value of £30, for Proficiency in Medicine, Surgery, and Obstetric Medicine	W. M. Barclay.

Further particulars respecting the Infirmary may be obtained on application to the Dean of the Infirmary Faculty, Dr. SPENCER; respecting the Hospital, on application to the Dean of the Hospital Faculty, Dr. MARKHAM SKERRITT.

Information regarding the Medical School will be afforded by the Dean of the School,

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